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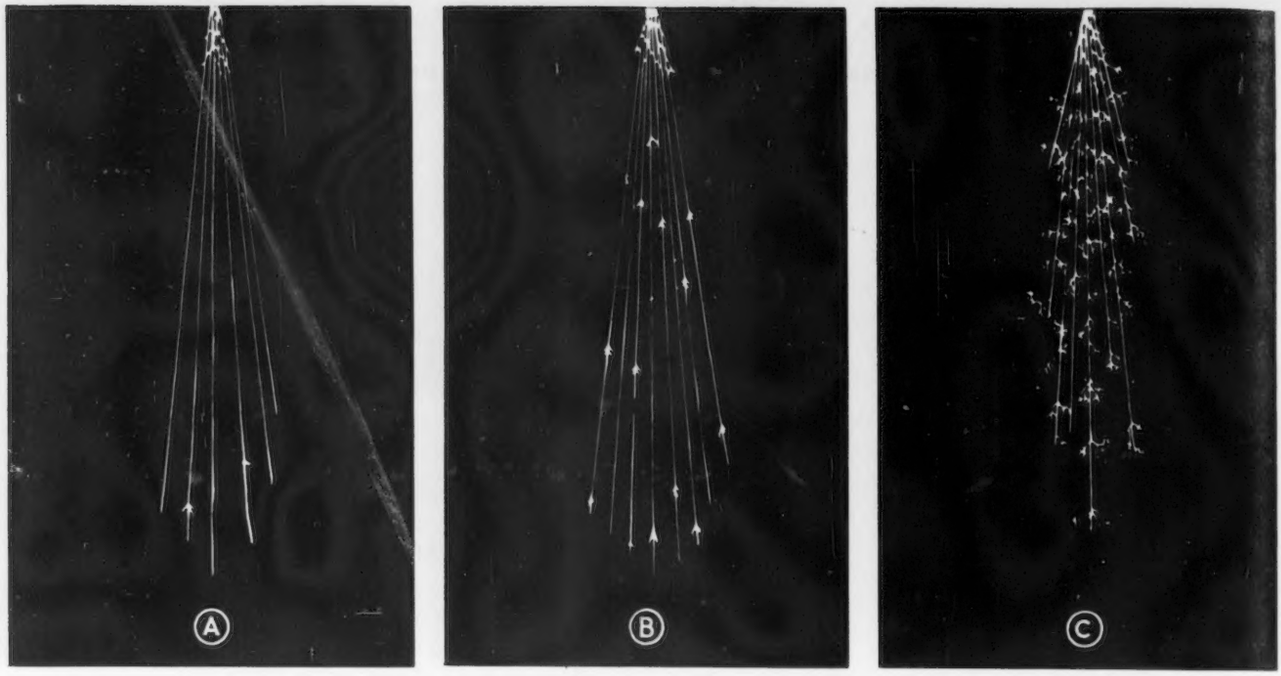

Mark your answers here. Carbon content of steel A. is __% B. is __% C. is __% Correct spark readings are given at lower left

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Well Done

THE tumult and the shouting are over. The captains and the kings have departed. They go to prepare for a greater test. We speak, of course, of the Republican National Convention. It has chosen the party's standard bearers and released the platform upon which the campaign will be waged.

As platforms go, it has the virtue of brevity. The inevitable percentage of platitude is reasonably low. If much of the language is general and equivocal, we must bear in mind that the purpose of a platform is to attract and not to repel votes.. The resounding apostrophes to the good, the true and the beautiful must be accepted with tolerance.

It is easy to look at such a platform and be critical. "Government ... should ... promote a stable economy so that men and women need not fear the loss of their jobs or the threat of economic hardships ...."

The conservative may regard this as an open door for that brand of "affirmative democracy" under which governments eventually socialize every sphere of economic activity and instead of being the servants become in effect the masters of the people. It may be argued that the fear of unemployment is one of the few remaining effective disciplines which can force the laggard to work; that full employment has lost its appeal, even to labor governments which used it in riding to power; that the return of some uncertainty is one of the conditions necessary to assure efficiency and greater productivity.

The critic may note the failure of the plank on inflation to mention a return to the gold standard; that its promise of a "sound currency" is meaningless unless coupled with some automatic and absolute check on the potentially infinite issue of currency and expansion of credit. He may note the failure to mention wage stabilization as a logical anti-inflation measure.

On the other hand, the same critic can find little quarrel with the planks on national defense and foreign policy. The party clearly commits itself to a military force capable of protecting the interests of this country and effectuating its diplomacy. In foreign policy it recognizes frankly the conflict with Russia and the need for greater firmness and realism in dealing with the Communists. The comment on collective security--indeed the character of the Republican nominee--indicates a complete abandonment of isolationism.

If the social philosophy implied in the "Declaration of Principles" seems too far to the left for the G.O.P., it can only be so regarded when examined by the social and economic criteria of a generation ago. The world has moved far in its thinking since the twenties. History may record this change as part of a worldwide deterioration in political thought. The G.O.P. platform, however, should be weighed in the light of prevailing standards. Compared to practice and principle in other parts of the world, this platform constitutes a conservative decalogue. It remains, after such examination, a reassuring guide for a major political party.

Joseph Stagg Lawrence

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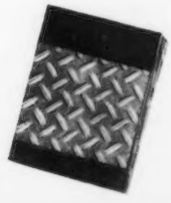

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► The steel wage raise will take Philip Murray, steelworkers head, off an uncomfortable seat. He was tied up with a 2 year contract. It was no easy task to sit by and see all other industries raise wages one by one while steel workers fumed and fussed. The basic reason for the steel wage raise is simply because steel management cannot at this time afford to see morale in their plants drop to a new low because of wage increases in other industries. It can be assumed that the steel price rise to come will take care of the increased wage costs.

► A new steelmaking process, claimed to be as revolutionary as the Bessemer, has been discovered by a French scientist, M. Adeline, a member of the Volverhampton research team. Using this process, it is reported that light scrap and other metals can be fused with a mixture and melted into the finest quality steel ready for pouring into molds.

► Some machine tool builders report that prospective purchases of machine tools are holding back placing of orders in anticipation of possible Government expenditures for plant equipment in their plants.

► The Southwest is being flooded with 2 in. welded low carbon pipe of unquestionable origin but of unquestionably poor quality. It is not unusual to find 5 pct of the pipe in a carload lot to be split from end to end along the weld. The steel is being purchased through brokers who refuse to tell where it comes from.

► Some industrialists estimate that the recent coal settlement will result in steel costs going up anywhere from $1.25 to $1.80 per ton of finished product.

► A notable feature of new mill machinery is the record breaking use of antifriction bearings in many types of spinning, weaving and knitting units where emphasis is now strong on labor saving, less maintenance and longer wear.

► One of the problems confronting the auto industry in connection with its hot rolled requirements is that even though steel buyers are willing to pay the extra cost, they may not be able to get the proper gage as cold rolled. This would force some unwilling changes on the industry's engineers. Industry would like to use 16 gage and heavier on many underbody parts. But the future availability of this material seems open to question, particularly since some producers are moving steadily toward 100 pct cold rolled products.

► One of the objections to allocations is the possibility of discrimination. For example, foundries that might be the favored recipients of pig iron would then be permitted to substitute pig iron at $42 per ton for scrap that they are now buying at prices as high as $75 per ton.

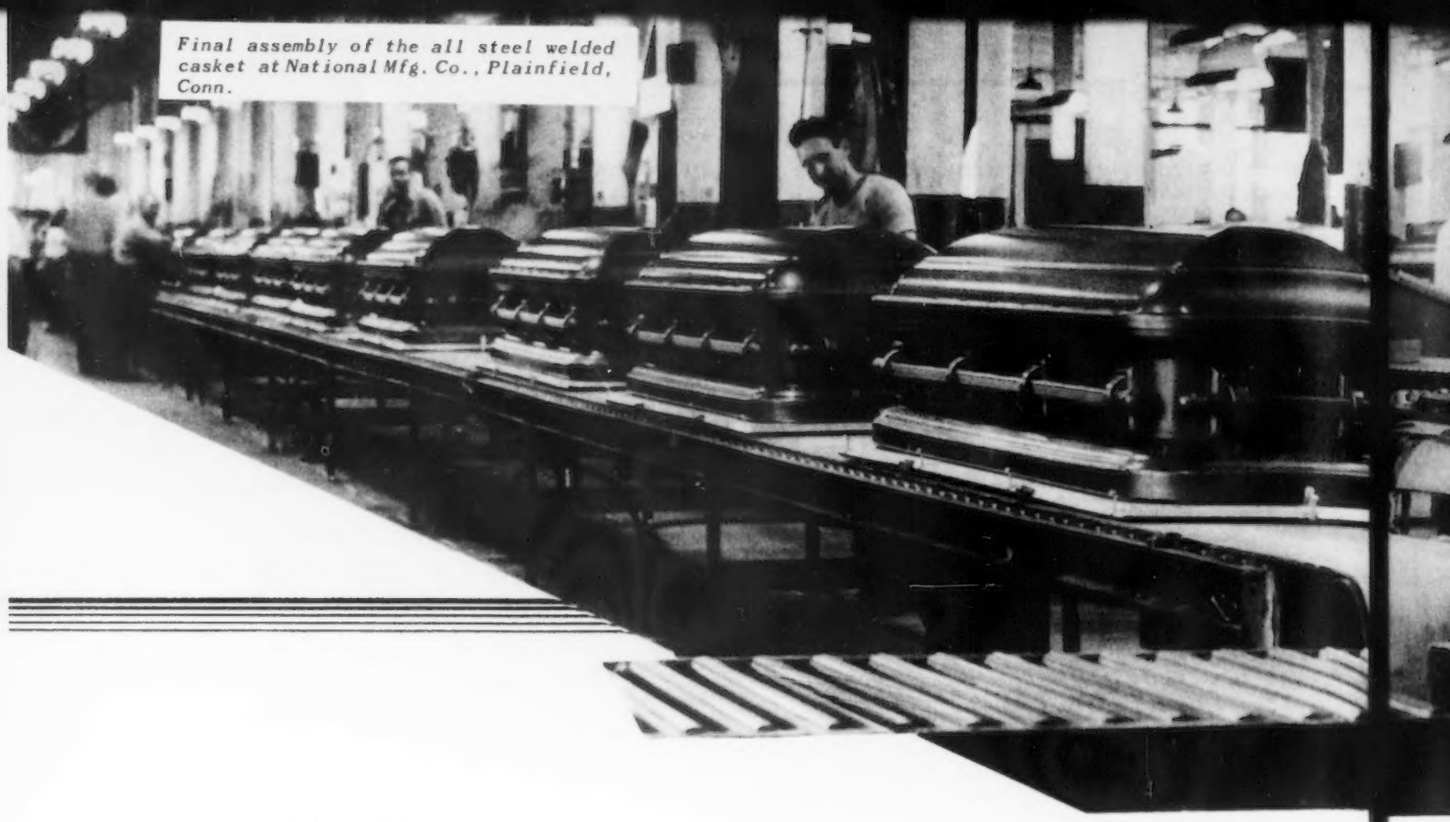
► Unless railroads order a lot more freight cars within the next 5 or 6 weeks, January deliveries will drop significantly. Trouble is that the current backlog of 130,000 cars is unbalanced. Railroad captive shops and a couple independent shops have plenty of orders on hand. But independent shops as a whole have little or no January business on the books. Cars for January delivery must be ordered by mid August.

► The Rhodesian Iron and Steel Commission steel works started operations in April with the opening of a blast furnace at Que Que. Early next year the first steel tubes to be made from Rhodesian iron ore will be turned out from the Stewarts and Lloyds factory at Que Que. The plant will be designed to produce standard seamless tubes, both black and galvanized. Steel will be supplied from the neighboring Rhodesian Iron and Steel Commission works.

► Considerable success has been reported by a producer of vacuum cleaners who is using a wheelabrator to remove defective paint from castings prior to repainting. Burrs are also removed from aluminum castings by the same method.

► Those steel users who have been half way between steel centers will hit paydirt when steel goen on an f.o.b. mill basis. They can pick and choose their products and their freight will be about the same either way. They will also be better situated as to density of consumption of their own product. This of course excepts users in such large areas as Chicago where steel supplies and consumption of finished articles coincide.

► A method of notching the lips of high speed drills has resulted in a remarkable increase in the permissible speeds and feeds of drills. The technique, in a test of drilling copper, drilled through the material at a drill feed of 14 fpm, and on boiler plate at close to 2 fpm.



Final assembly of the all steel welded casket at National Mfg. Co., Plainfield, Conn.

o o o

By J. R. BAREFOOT
Assistant to the President,
Federal Machine & Welder Co., Warren, Ohio

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THE end of World War II brought the armed services face to face with the task of carrying out a repatriation program for American servicemen who lost their lives in the various theaters of war. The task, aside from a tremendous shipping and transportation problem, involved the procurement of burial caskets suitable for both transportation and burial. The Office of the Quartermaster General assumed the job of establishing specifications and handling the procurement of 250,000 such caskets. Prime contracts for 50,000 units each were awarded to National Mfg. Co., New York; Goodyear Aircraft Corp., Akron; Galanot Products Co., Philadelphia; Cincinnati Coffin Co., Cincinnati, and Continental Industries, Inc., Chicago.

The Warren Stamping Co., Warren, Ohio, a subsidiary of Federal Machine & Welder Co., was the principal subcontractor for National Mfg. Co., contracting to produce all of the necessary metal stampings and to deliver these stampings bonderized and primed for final painting. Warren Stamping Co. also took subcontracts to supply various parts of these caskets to other prime contractors.

The magnitude of this program made mass production methods essential. The equipment needed for the program included presses, special resistance welders, bonderizing and painting equipment, and materials handling equipment. The investment in machinery and tools for the production schedule totalled about $400,000, plus an additional investment of $130,000 in dies. The plant was set up for a daily production of about 300 complete units, plus various components which were supplied to other prime contractors.

In addition to tooling the plant of Warren Stamping Co., Federal Machine & Welder Co., also supplied welding equipment for the casket programs at Goodyear Aircraft Corp., Galanot Products Co., and Cincinnati Coffin Co.

Warren Stamping Co. made the three main stampings, the body, the base and the lid. These stampings were made on a line of four

All Steel Burial Caskets

Mass Produced

Setting up to make 50,000 burial caskets, one-fifth of the total under the armed services repatriation program, Warren Stamping Co. devised a production-line system. Production methods for this unusual job of making casket lids, bodies and bases are described in this article.

Warco presses, shown in fig. 1, which were designed and built by the Warco Press Div. of Federal Machine & Welder Co. The first operation press is a Warco 1200 ton D2-120 double-action mechanical welded steel unit with 800 tons pressure on the punch holder and 400 tons pressure on the blank holder slide. The press blank holder has four pressure points and the punch holder has two pressure points. Pneumatic cushions with hydraulic locks hold the draw pad and act as a lift-out to remove the finished stamping from the die. The second operation press is a Warco 500 ton 2-132 single action welded steel tie rod machine. The third operation press is a Warco 800 ton 2-120 single action welded steel tie rod machine equipped with a pneumatic die cushion. The last operation press in the line is a Warco 400 ton 2-120, also a single action welded steel tie rod machine.

In making the body stampings, 16-gage deep drawing steel sheets are fed through a roller leveller into the 1200 ton press. The complete body is formed in one stroke of the press and as the punch is retracted from the die, the part is lifted out of the die by the pneumatic cushion. A blanked casket body is shown in fig. 2. The cross section of the casket itself, shown in fig. 3, shows the depth of the draw required for the body, an exceedingly deep single draw of 13 in. The stamping is then moved from the 1200 ton press to the 500 ton press. Here the excess metal on the blank is trimmed off. The third operation, performed on the 800 ton press, flanges the edges and restrikes the body. The last press operation, on the 400 ton press, pierces the body to accommodate the fasteners. The body is then embossed in 12 places on an hydraulic embossing machine to accommodate the nuts for the handle mounting brackets.

The base of the casket is made from 18-gage steel sheet and the lid is formed from 16-gage stock. Both the lid and the base are drawn in the 1200 ton press. Excess metal is trimmed from both stampings in the 500 ton press and the lid and base are restruck in the 800 ton press. The final press operation is the piercing of the

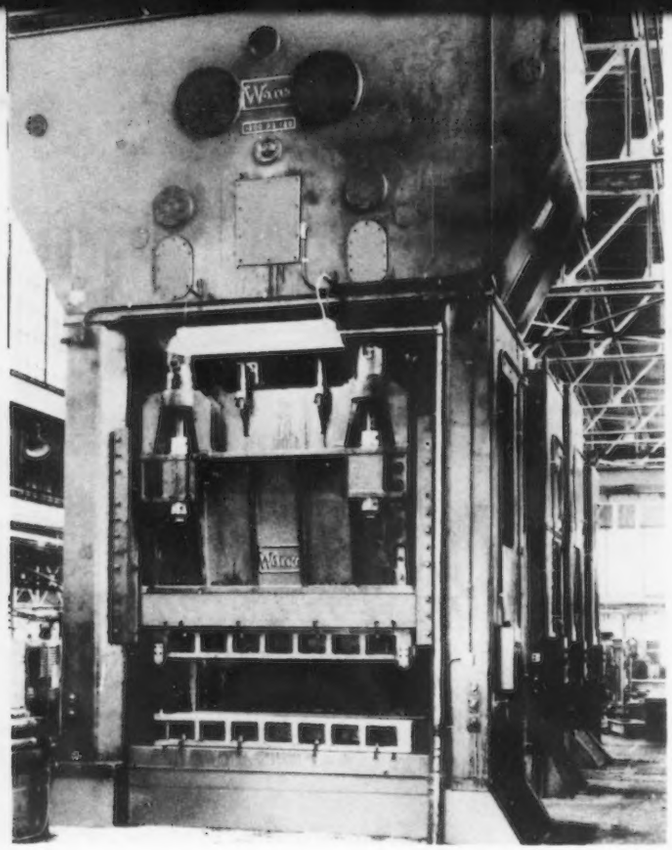
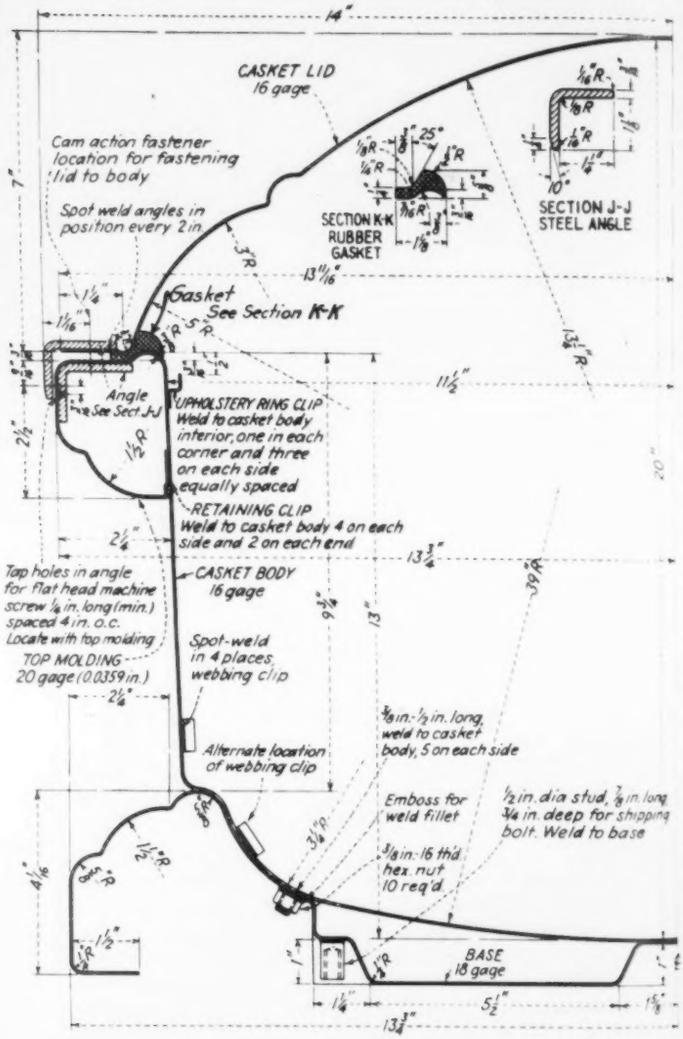


FIG. 1 - Three casket stampings, the body, lid and base, are produced on this line of four Warco presses. Complete forming in one stroke is performed on the first press; the second press trims the stamping; restriking and flanging is performed on the third; and the fourth press performs piercing operation.

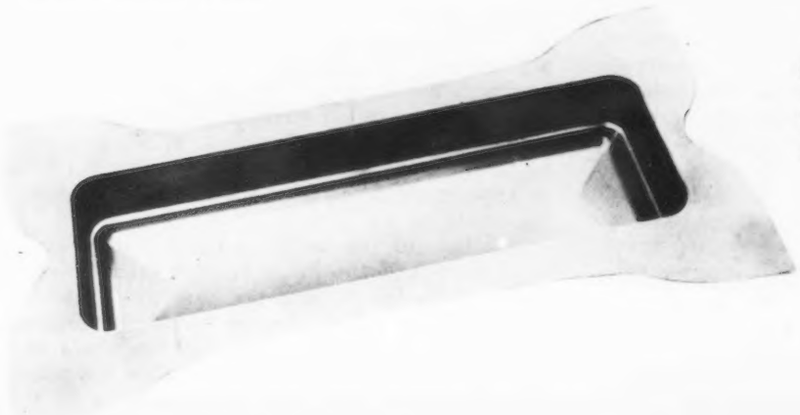
holes in the lid for the fastening devices and the piercing of the holes in the base for attaching the body to the base. These operations are performed on the 400 ton press. The base is then flanged on a special hydraulic curling machine.

The casket body, after the press operations, is moved to a Federal 12-head projection welder shown in fig. 4, where the nuts for 24 handle mounting brackets are projection welded to the body in one operation. The Federal 40-head projection welder shown in fig. 5 then welds to the body 10 base welding studs, eight webbing clips and ten upholstery ring clips. The welder is also equipped to weld on 12 molding clips, but a



BELOW

FIG. 2 - This is the casket body blank after drawing on the 1200 ton double action press.



ABOVE

FIG. 3 - All major dimensions of the casket are shown in this drawing. The body is an exceptionally deep draw, totalling 13 in.

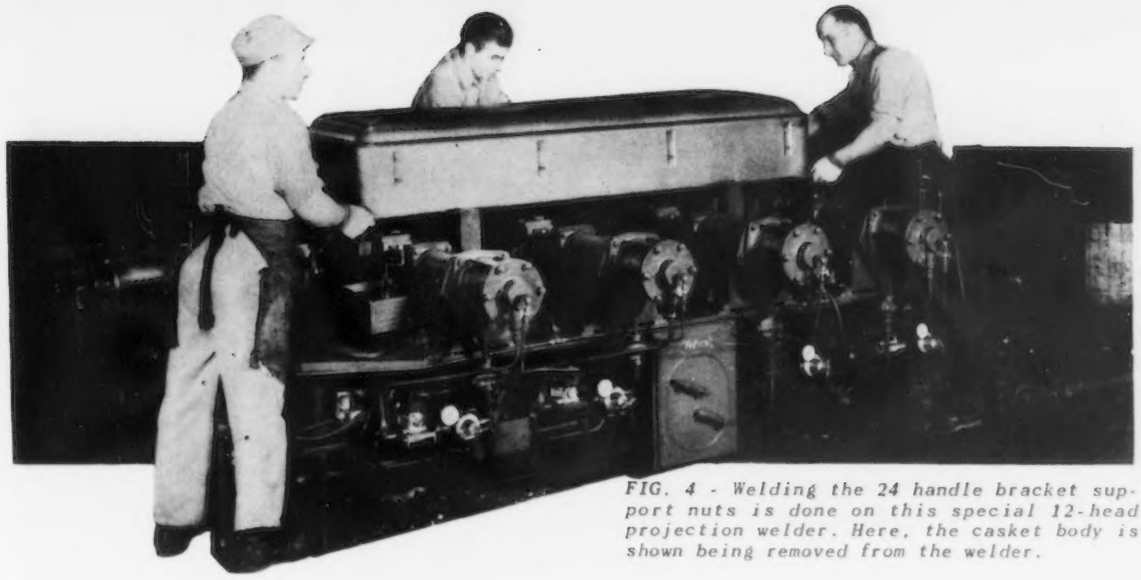


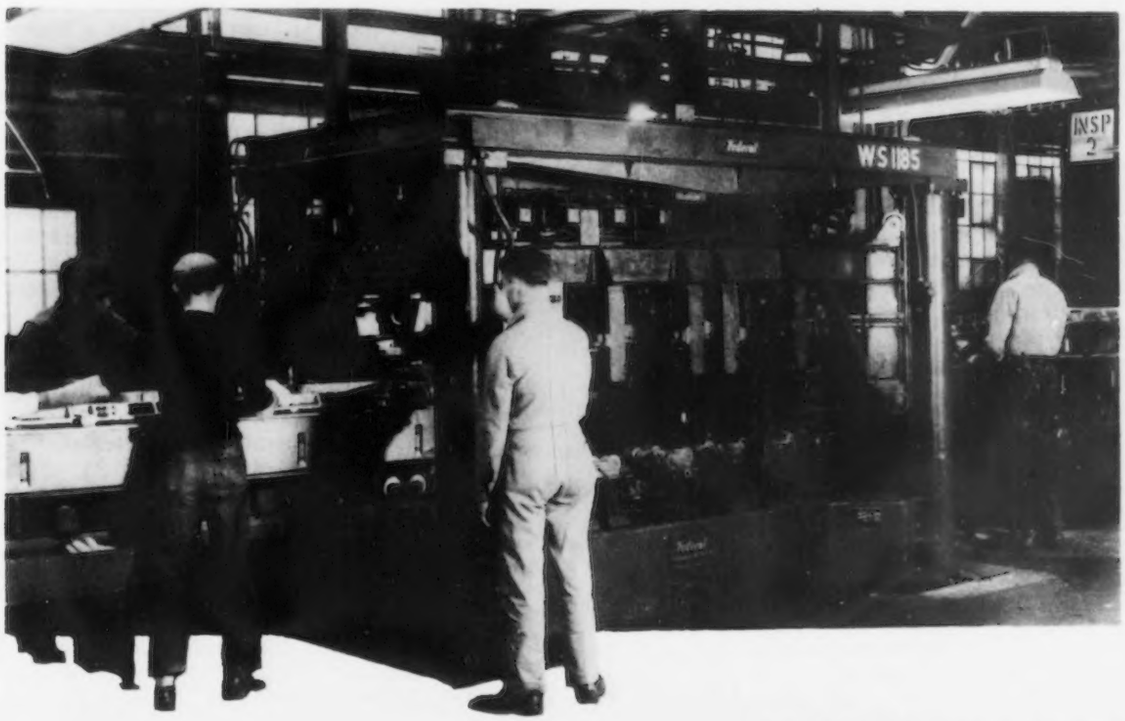
FIG. 4 - Welding the 24 handle bracket support nuts is done on this special 12-head projection welder. Here, the casket body is shown being removed from the welder.

change in casket design eliminated this phase of the operation.

The base studs are loaded into the lower dies in the welder; webbing and upholstery ring clips are loaded into a fixture which in turn is set inside the casket body; and the body then is moved on a roller conveyor into the welder under the main welding head. The welding head is lowered hydraulically into the body to the welding position; the welding sequence is initiated; and the welds are made. In the meantime, another casket body is being prepared for welding.

Two pneumatic cylinders on this machine operate the casket locater stops. The two welding transformers in the lower frame are wired in parallel and are controlled by a common regulator. The secondaries of these transformers are connected to the ends of conductor bars, thus distributing the current output evenly over the entire length of the casket body to all four stud guns. Four upper transformers operate independently, the heat output of each being controlled by its own regulator. The two end transformers are each connected to a double bus bar distribution system, the shape of which is approximately the same as the overall dimentions of the casket body. The weld heat of each of the two center transformers is distributed through a separate secondary circuit consisting of the necessary conductors required to place the weld

FIG. 5 - Designed originally to simultaneously make 40 projection welds, but changed because of a change in casket design, this 40-head welder welds 10 base studs, eight webbing clips and 10 trim clips to the casket body.



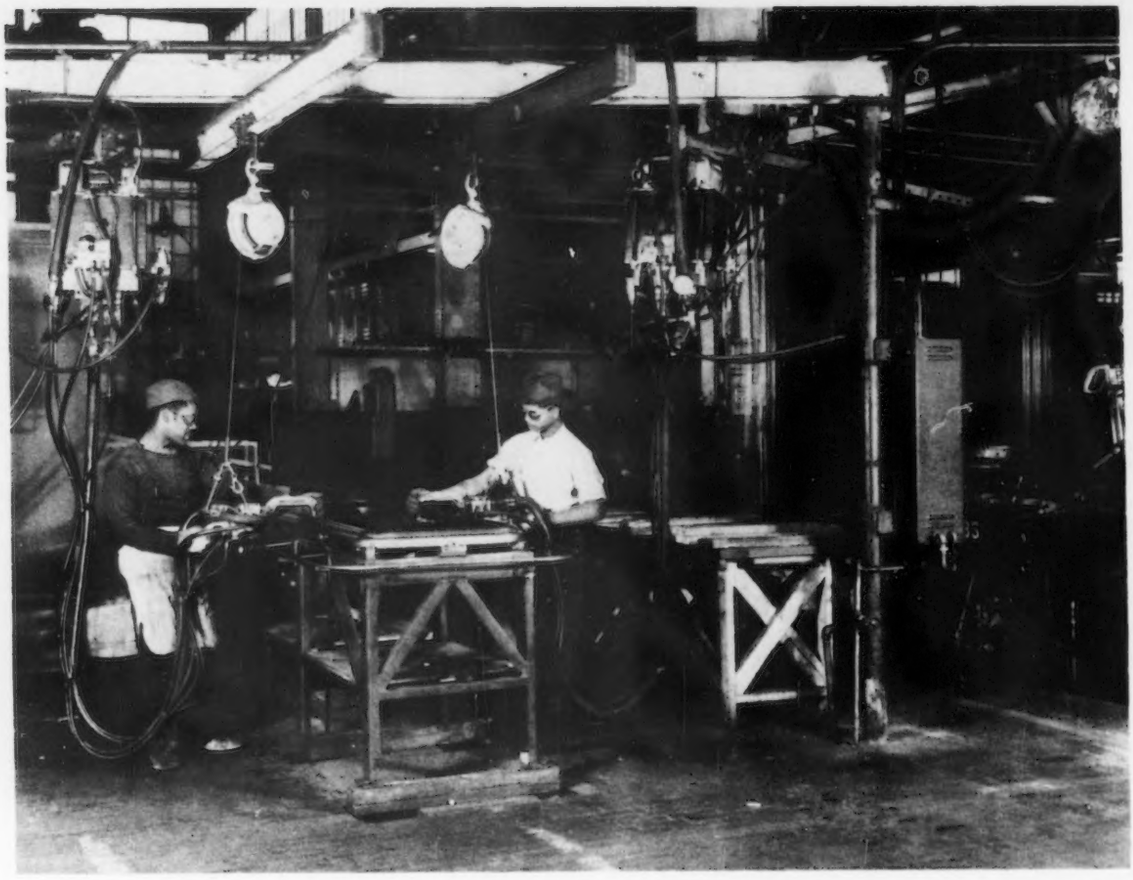


FIG. 6 - Molding is spot welded to the body angle ring by these two 50-kva air-operated gun welders. The guns are hung on spring balancers to facilitate handling.

guns in position to weld the webbing clips. Hydraulic operating pressure is supplied in this machine by a Vickers double pump and combination valve unit.

After the casket lid has been pierced on the 400 ton press, the angle ring which fits completely around the outside is spotwelded to the lid. This is done on a special Federal welder equipped with four 75-kva transformers using two portable short-circuiting type guns. The lid is placed in the welder fixture on top of the angle ring. The angle ring is in contact with a copper bar which is connected to one side of the welding transformer. Directly under this copper bar is another copper bar, insulated from the top bar and connected to the other side of the welding transformer. To make a weld, one tip of the short circuiting gun contacts the lower copper bar and the other tip contacts the flange on the lid. The current passes from the lower copper bar through the gun yoke, thus through the lid flange and the angle ring, completing the weld circuit.

In the meantime, the molding that runs around the casket body is assembled with the body angle ring. This molding is supplied by Goodyear Aircraft Corp., and the angle rings for both the lid and the body are supplied by the American Welding Co., Warren, Ohio. The body angle ring and the molding are assembled by placing the angle ring in a fixture and sliding the molding down over it. The molding is then spot welded to the angle ring, using two Federal 50-kva air operated gun welders, shown in fig. 6. These welding guns are suspended from spring balancers to facilitate handling. Flat tips are used in the guns to contact the molding so that marking on the outside of the molding is prevented.

Warren Stamping Co., also makes handle mounting brackets which are formed on a Warco 50 ton open-back inclinable press from 16-gage strip stock. The strip is fed into the press by a roller feed and the press is equipped with progressive dies which produce one bracket with each stroke of the press. The brackets are then moved to a Federal PA-1-8 50-kva air-operated press welder where four ¼-in. nuts are welded to the brackets to receive the handle bracket screws. These nuts are placed in the lower die of the welder and the mounting bracket is placed on top of the nuts. The upper welding head is brought down pneumatically and the four nuts are welded on simultaneously when the welding circuit is initiated. The bracket mounts then are ready for bonderizing and painting.

After the welding operations are completed on the body, lid and base, and the molding is attached to the angle ring, the parts are moved by means of an overhead conveyor to the bonderizing unit. In the bonderizing unit, the parts are first sprayed with Wyandotte alkali cleaner, and then pass through two hot water rinsing units. From the hot water rinse, they are sprayed with Bonderite 100. They then pass through a cold Parcolene acid rinse and then to the drying oven which dries the parts at a temperature of

about 190°F.

After drying, the parts pass through two wet paint booths where they are spray painted with a prime coat of earth brown paint. The paint is applied on one side in the first booth and on the opposite side in the second booth. The conveyor then carries the parts through the drying oven which drys the paint at a temperature of 400°F.

After painting, the base and lid are ready for final inspection and shipment. The body, before shipment, is transferred to a belt conveyor where the molding and angle ring are attached by means of 24 Simmons cam-fastening receptacles, and the 12 handle mounting assemblies are given a final inspection.

The casket parts are subjected to numerous rigid visual examinations in the process of manufacture to insure an extremely high quality product. Each part must be visually perfect after each operation before it is permitted to proceed to subsequent operations. After prime painting, the parts are packed and shipped by truck to the plant of National Mfg. Co., Plainfield, Conn., for finishing and assembling.

The operations at National Mfg. Co. begin in the painting dept. where the lids, bodies and bases are hung on overhead conveyors and spray painted. After drying, they are transferred to a roller-table conveyor and assembled. Components such as the hand rails, finials, and hand-rail brackets are bonderized and painted, feeding into the assembly line as needed. The body is bolted to the base, the hand rail plates and side and end hand rails are installed, and the hand rail ends, which are slush castings, are installed. Webbing ,trim and upholstery are installed as well as a rubber gasket that is glued around the top edge of the casket body.

Each casket, particularly the lid, is given a very rigid visual inspection after buffing. The lid must have no flaws in the surface. In cases where the lids do not pass inspection, they are sent to a repair station where any defects are removed. This may involve hammering out and refinishing a dent to merely touching up a bad spot in the paint.

The caskets are then mounted on a metal-bonded plywood base, wrapped in a heavy Kraft paper, and placed in a substantial plywood case, all interior sides of which have metal-bonded surfaces.

The finished casket, not yet mounted on the base, in fig. 7 shows the interior finish. Fig. 8 shows the casket with the lid in place. As shown in fig. 8, the casket weighs about 260 lb, but when ready for shipment, enclosed in the plywood shipping container, the assembly weighs about 400 lb.

LEFT

FIG. 7 - National Mfg. Co., Plainfield, Conn., finishes the casket. This shows the interior trim and the rubber molding in place, as well as the side and end rails.

RIGHT

FIG. 8 - The finished casket must be visually perfect in every detail for acceptance. This shows the completed casket with the lid in place. The lid is fastened by the 24 sheet metal screws around the angle ring.

FIG. 1 - Welding a frame girder for a Bucyrus Erie dragline excavator. The manual use of hidden arc welding has eliminated the necessity of edge preparation in the 1/2-in. plate, and reduced welding time by 65 pct.

o o o

Manual Hidden Arc Welding

Utilizing extremely high current densities, manual use of the hidden arc process of welding, as described herein, has reduced welding time on frame girders at the Chicago plant of Bucyrus Erie Co. Edge preparation is reduced or eliminated and the weld quality is reported to be excellent.

REDUCTION or elimination of edge preparation time, improved weld quality, and a reduction in welding time of as much as 65 pct has been experienced by the Bucyrus Erie Co., at its Chicago plant through the manual use of the hidden arc process in welding frame girders. The manual hidden arc welding technique is replacing regular hand welding in the fabrication of main sub-frame girders and smaller frame girders for heavy duty dragline excavators.

The welding equipment being used at the Bucyrus Erie plant is a unit recently introduced by the Lincoln Electric Co., called the Manual Lincolnweld. The unit is seen in operation welding a girder in fig. 1. It is portable and provides all the necessary welding current and auxiliary power plus the automatic wire feed mechanism and controls. The basic element of the unit is a standard 600 amp welder which can be used for regular manual welding as well as manual hidden arc welding. Mounted on the welder is a compact unit containing the wire reel, feed mechanism, drive motor and voltage controls. A special cable to which is attached a cone shaped gun completes the equipment.

The electrode wire is automatically fed to the work through the flux that is deposited by gravity from the gun. The wire is fed from the reel and through the special cable to the gun at the proper speed for the current being used. The cable is rubber-covered stranded copper, in the center of which is a closely wound coiled spring. providing a light flexible carrier for both welding currents and electrode wire. The process uses a small 5/64 in. diam electrode.

A constant arc voltage is automatically maintained independently of the height of the gun. The gun can, therefore, be raised or lowered to regulate the amount of flux needed to cover the arc completely. With the 5/34-in. diam wire, extremely high current densities are used. Because wire is fed through the nozzle at the rate of approximately 300 ipm and because current is introduced to the wire close to the arc, it is possible to use 600 amp with only a 5/64-in. diam wire. For regular hand welding an electrode over four times as large, or 3/8 in. diam is required to handle 600 amp. The current densities of Manual Lincolnwelding concentrate sufficient heat to weld 3/4-in. plate in a plain butt weld, one pass on each side, without edge preparation.

Fig. 1 shows a small frame girder for a 200W dragline excavator being welded. The girder is 9 ft, 3 in. long by 30 in. wide. It is made by welding a 1/2-in. center plate, 19 in. wide, between an angle 8 x 6 x 1/2 in., and an angle 5 x 3 1/2 x 1/2 in. The girder is assembled in the jig and clamped, as shown, so that no tack weld-

FIG. 2 - The welding on this main sub-frame girder was four times faster with the manual hidden arc equipment than with conventional hand techniques. The girder is 6 ft high and 40 ft long. This process uses the highest current densities ever used. On this 3/4-in plate a setting of 500 amp was used with a 5/64-in. diam electrode.

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Cuts Welding Time by 65 Pct

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ing is required. Using the high current densities of manual hidden arc welding, no edge preparation is necessary. One pass is made on each side using a machine setting of 425 amp with a travel speed of 22 ipm. The electrode is 5 64-in. wire.

The welding is completed in 30 min. Previous techniques of hand welding, using a 1/4-in. diam electrode and 350 amp, necessitated edge preparation. The welding time to make the multiple pass welds was usually 1½ hr. Freedom from smoke, spatter, and visible arc rays is a characteristic of the hidden arc process.

Fig. 2 illustrates how the main sub-frame girder for a 500W dragline excavator is fabricated. This girder is one of the members of the frame supporting the dragline which has a 200-ft boom and a 10-yd bucket. The girder is 6 ft high and 40 ft long. It is made by cutting in half a 30-in. 190-lb beam and welding between the two halves a 3/4-in. plate 43 in. wide. The beams are cut with a torch and then planed to a height of 14½ in. With a hand grinder all edges of both the plates and the beam sections are roughly ground to a ½-in. land. The resulting vee is approximately 45°.

The three parts are then assembled in a clamping jig, similar to the smaller one shown, which holds the parts so that no tacking is necessary. The girder is then welded by making one pass in each joint on both sides using a setting of 550 amp at a speed of about 10 to 12 ipm. The welds are made without interruption except where the clamping jig interferes. The spots that appear in the photograph to be patches in the weld are the areas that are welded after the girder is removed from the jig. The entire girder is welded by one man. The fabrication takes 11 hr, including handling time. Previously, it took two men 20 hr to weld these girders.

In addition to reducing the welding time, expensive edge preparation has been eliminated. Previous hand welding necessitated scarfing all edges to a 1/8-in. land to produce a 60° vee. This was done in a planer which carries a high hourly rate. The edges are now prepared, as described, by rough hand grinding.

In addition to reducing the cost of making big weldments, such as these frame girders, the manual hidden arc unit has also been used with cost reducing success in conjunction with variable speed positioners that revolve the work as the welding gun is held in one position. It is also possible to get into relatively inaccessible positions with the gun so that it is possible to take advantage of hidden arc welding where it was previously impossible.

FIG. 1 - Group of automotive diecastings, most of which were buffed in semiautomatic setups prior to plating.

Special Buffing Machines and Fixtures

The expense of buffing operations in preparing surfaces for electroplating has always been a headache to plating shop managers. This article describes the special semiautomatic machines developed to minimize hand work and to reduce costs at one plant which specializes in the plating of zinc diecastings for automotive parts and plumbing fixtures. The machines, for pieces as long as 66 in., permit more rapid and more uniform buffing.

PREPARATION of surfaces for electroplating is a large factor in overall finishing cost. Economies in polishing and buffing have such an important effect upon total charges and upon profits that plating plants have been continually seeking economies through mechanization of buffing operations.

Most of the zinc diecastings plated at the Gerity-Michigan Corp., Adrian, Mich., require some polishing, at least at parting lines; and nearly all the castings, except for some small parts that are barrel polished by Roto-Finish methods in a secondary plant, require buffing to insure high quality plated surfaces. Many of the diecastings, some of which are shown in fig. 1, are for automotive applications and must meet exacting specifications.

As most of the castings are required in medium to large quantities, considerable expenditures for mechanized buffing are justified at Gerity as they can be amortized out of savings in buffing cost.

In some cases, standard buffing units are used, but in other instances special machines or fixtures are needed to handle castings of unusual shape or size.

Despite continued efforts to minimize hand buffing on standard lathes, a great deal of such work is still required. Some hand buffing is often needed on limited areas of parts that are handled

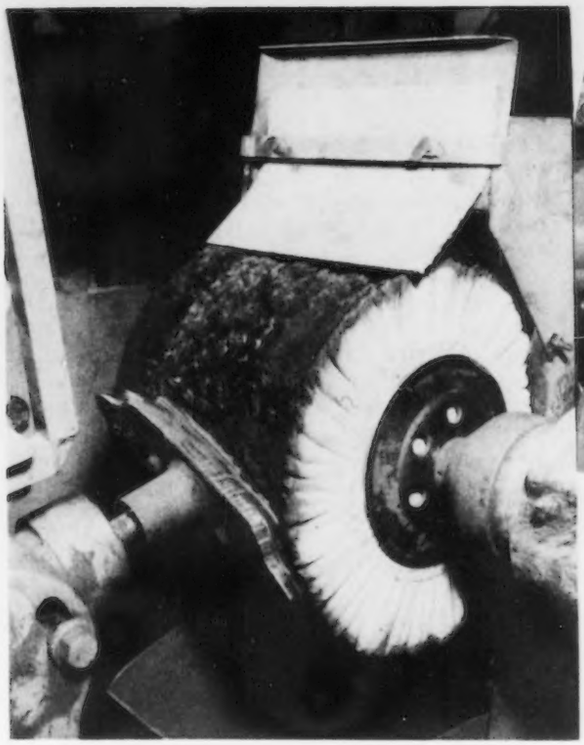

FIG. 2 - Oldsmobile rear deck ornament is mounted on a pivoted fixture which will slowly rotate the piece during buffing.

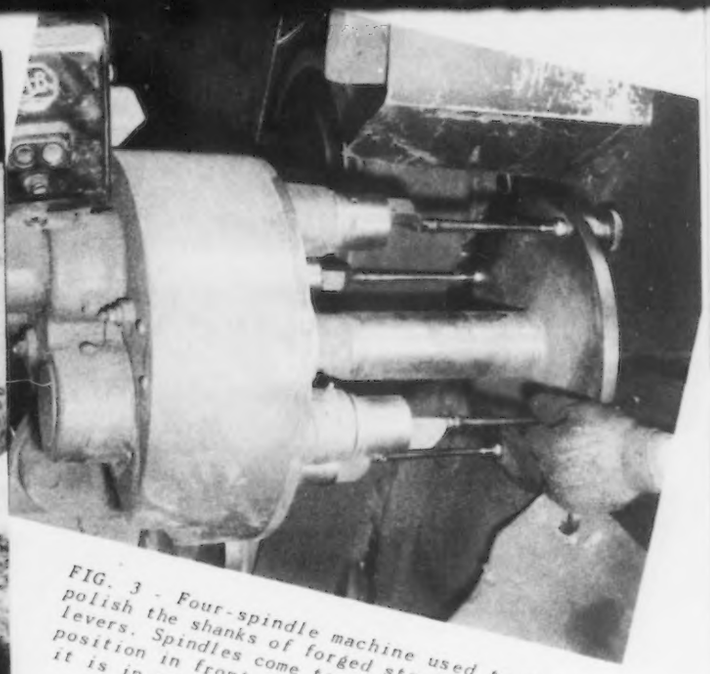

FIG. 3 - Four-spindle machine used to belt polish the shanks of forged steel gear shift levers. Spindles come to rest at the loading position in front, but rotate the work while it is in contact with the belt.

Reduce Plating Shop Costs

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on semiautomatic machines, as it is often not practical for the machines to be set up to give the specified finish to all the areas that require buffing.

Typical of semiautomatic buffing, done with a simple fixture in combination with a standard buffing lathe, is the setup shown in fig. 2. The casting buffed in this case is an Oldsmobile rear deck ornament which has an elongated shield shape with a hole in the center and ears extending at each side. It is the center piece in fig. 1. This part has crowned surfaces but fits a flat bottomed fixture that is pivoted to turn slowly about a central spindle at right angles to the face, the spindle projecting from a standard support.

Fourteen Matchless ventilated buffs, 16-in. diam size, are carried on the polishing head with cardboard spacers so that the total width slightly exceeds the length of the casting. Buffs turn at 1000 rpm and the work is set so that it revolves slowly at 2 rpm on the supporting spindle. Tripoli stick compound is applied to the buffs.

The operator loads the work, advances it to the buffing position, applies the stick compound and unloads the piece after it has made two revolutions. As the buffing of one piece proceeds, the operator loads another piece on a duplicate fixture in front of a duplicate set of buffs. With one man tending two setups, loaded and unloaded

alternately, only half the labor that would be required for hand buffing is needed. Approximately 120 pieces can be handled in an hour by each operator.

Pontiac gear shift forgings are among the few steel parts handled in this plant. These are polished on an Acme machine, shown in fig. 3, using a four-spindle holder arranged to index about a horizontal axis. Each spindle comes to rest at the front, loading and unloading, position and only the forging in the rear position is in contact with the polishing belt. A flexible wheel is used that distorts somewhat to accommodate the belt to the contour of the work.

Spring returned knobs are pulled outward from the dial flange by the operator's right hand when each forging is loaded and unloaded. As dial rotation is continuous, rapid polishing with only slight manual effort results. Rough polishing is done with a belt having 120 grit and finish polishing is done in a repeat operation using a belt with 220 grit.

Among the longest diecastings buffed is a 66-in. molding for Oldsmobile rear fenders, the bottom piece in fig. 1. This part has a rounded section with a groove down the center and buffing is done by two wheels set at appropriate angles to contact all surfaces of the molding as it is reciprocated longitudinally. The table of an old surface grinder was converted to this application. Fig. 4 shows the unit in operation.

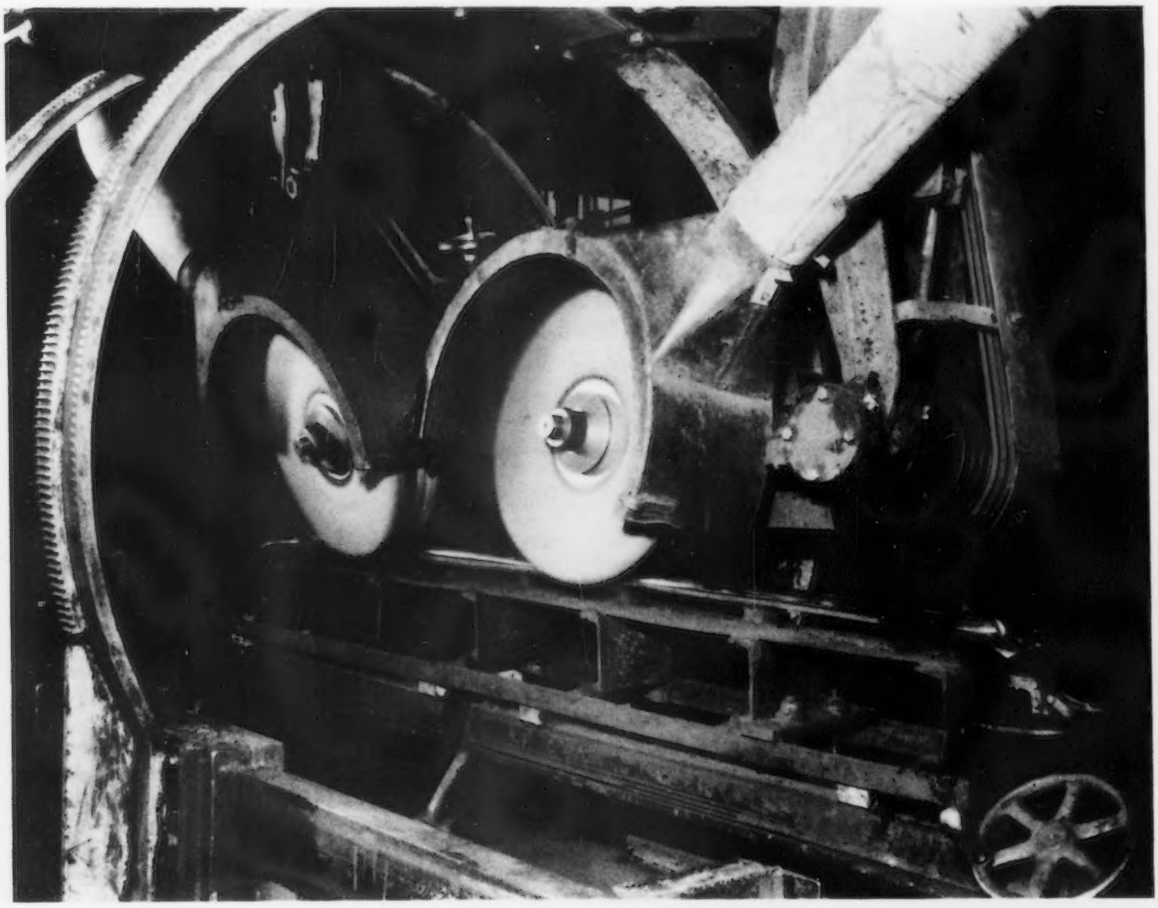
Buffs are carried on spindles driven by individual motors that form parts of the heads supported by rings attached to the base of the machine. Each ring has a circular rack on its outer diameter. A pinion engaging each rack is used to adjust the corresponding head and buff to the desired angle after which the head is locked in position. Stick compound is fed to the wheels automatically.

Moldings are held with a fixture mounted on the carriage and are buffed automatically as the carriage is reciprocated with a fairly rapid traverse under the two buffing wheels. Loading and unloading are done when the carriage is stopped at the end of its travel. About 55 moldings an hour can be buffed with this setup.

Oldsmobile grilles are built up from long castings one of which, shown in the upper center of fig. 1, is D-shaped. Each casting has a crowned surface that must be buffed and the wheel must follow the curved contour that is exposed to view in the finished assembly. As the number of such castings to be buffed is large, a special machine for each section is justified even though the motion of the casting in reference to the wheel, which is on a fixed inclined spindle, is necessarily rather complex.

One setup for such polishing is shown in fig. 5. The fixture, made to fit the casting, is set on a flat table on which it is moved automatically by a gear driven sprocket (*S* in fig. 5) that engages

FIG. 4 - Machine, made from a converted surface grinder, buffs 66-in. molding while it is reciprocated under the two wheels mounted above the carriage.



a roller chain mounted along the inner face of a flange projecting downward from the base of the fixture. This flange is shaped to conform to a horizontal projection of the front contour of the casting on the table.

As the sprocket turns slowly, the flange travels between the sprocket and backing rollers that bear against the outside of the flange. As it moves, the face of the casting is traversed against a buff whose spindle is inclined so that the faces of the buff are at an angle of about 45° to the top of the table.

Since the casting is curved in two planes, however, it is rocked about a horizontal pivot (*P*) at the same time that the base of the fixture is moved over the table by the sprocket. This rocking is controlled by a roller (*R*) which follows a cam on the under surface of the rocking portion of the fixture.

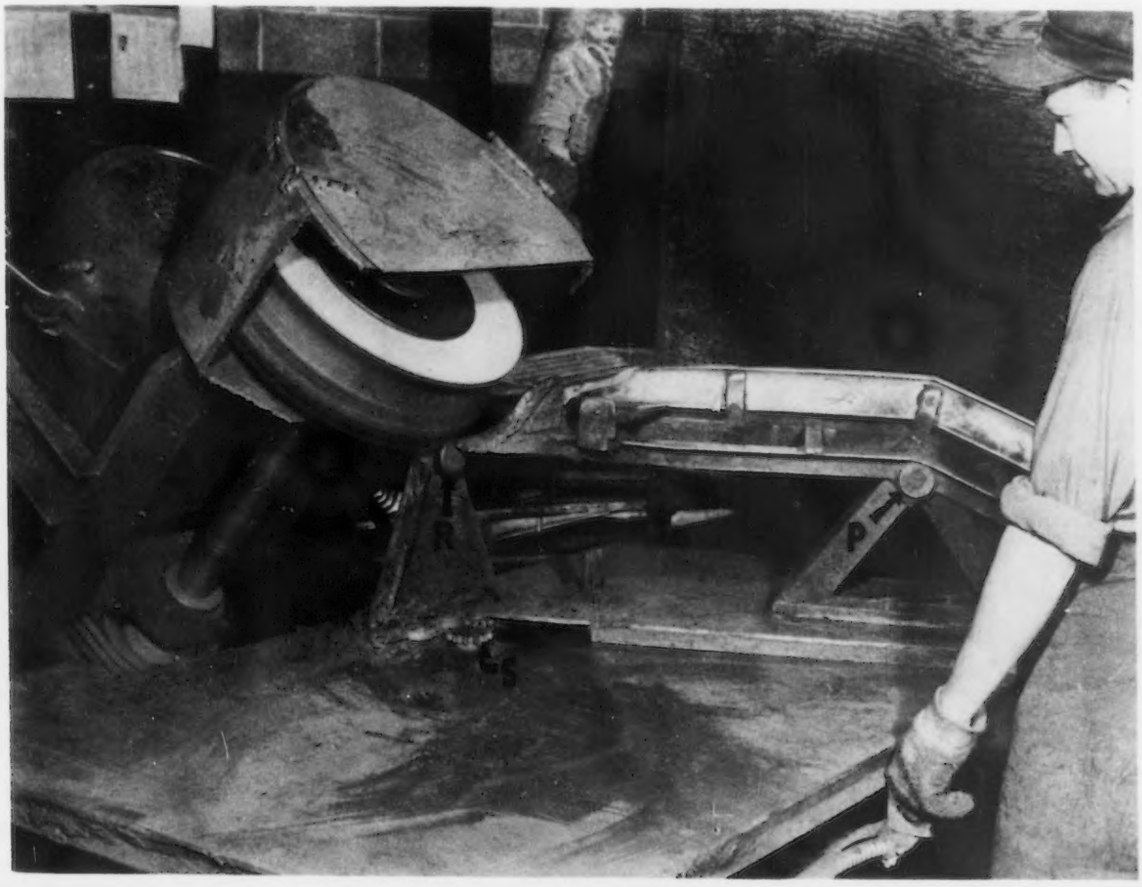
With this fixture about 55 castings an hour can be buffed over nearly all of the surface that requires buffing. The operator loads and unloads the fixture, starts and stops the sprocket and occasionally applies some stick compound to the buff. A second operator hand buffs the small areas not properly finished on the machine. Buffing by this method is more rapid and more uniform than complete hand buffing and requires much less manual effort. At the end of one traverse, the fixture is reloaded and is fed backward in the return traverse by throwing a hand lever at the front of the table to reverse the motion of the sprocket.

A fixture operated in a manner similar to that just described, except that motion is in one plane only, is used to buff Pontiac name plates, shown just below the center of fig. 1. The fixture holds a pair of castings, as in fig. 6. The wheel is mounted on an inclined spindle to facilitate buffing of the curved faces containing the recessed letters, which are disposed at an angle around the front edges of the castings, and the slotted horizontal face above the lettered surface. Fastened to the under side of the fixture is an angle iron bent to the fixture contour and, attached to the inside of the vertical face of this angle, is a length of roller chain that engages a gear driven sprocket, as in fig. 5. A roller in back of the sprocket runs against the outer face of the angle iron and feeds between the sprocket and the roller as the two rotate.

Motion of the sprocket causes the fixture to turn as it rests on the flat table and keeps the wheel in contact with the surfaces to be buffed. In this unit, as there are two castings forming most of a closed contour, two castings are buffed with each revolution of the fixture.

There is a gap in the chain between the ends of the two castings so that the fixture stops automatically for unloading and reloading when the sprocket enters this gap. The sprocket is reversed to buff the next pair of castings. Fifty-

FIG. 5 - Automotive grille bar being buffed on a semiautomatic fixture which is moved along the bed by the sprocket (S) and is rocked about the pivot (P) by contact of roller (R) with a hidden cam surface.



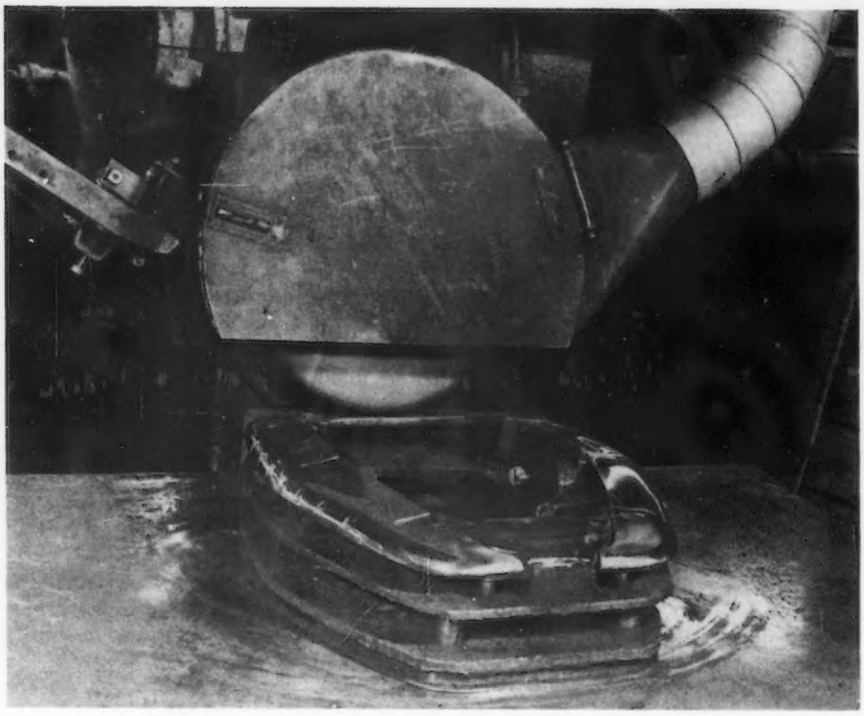
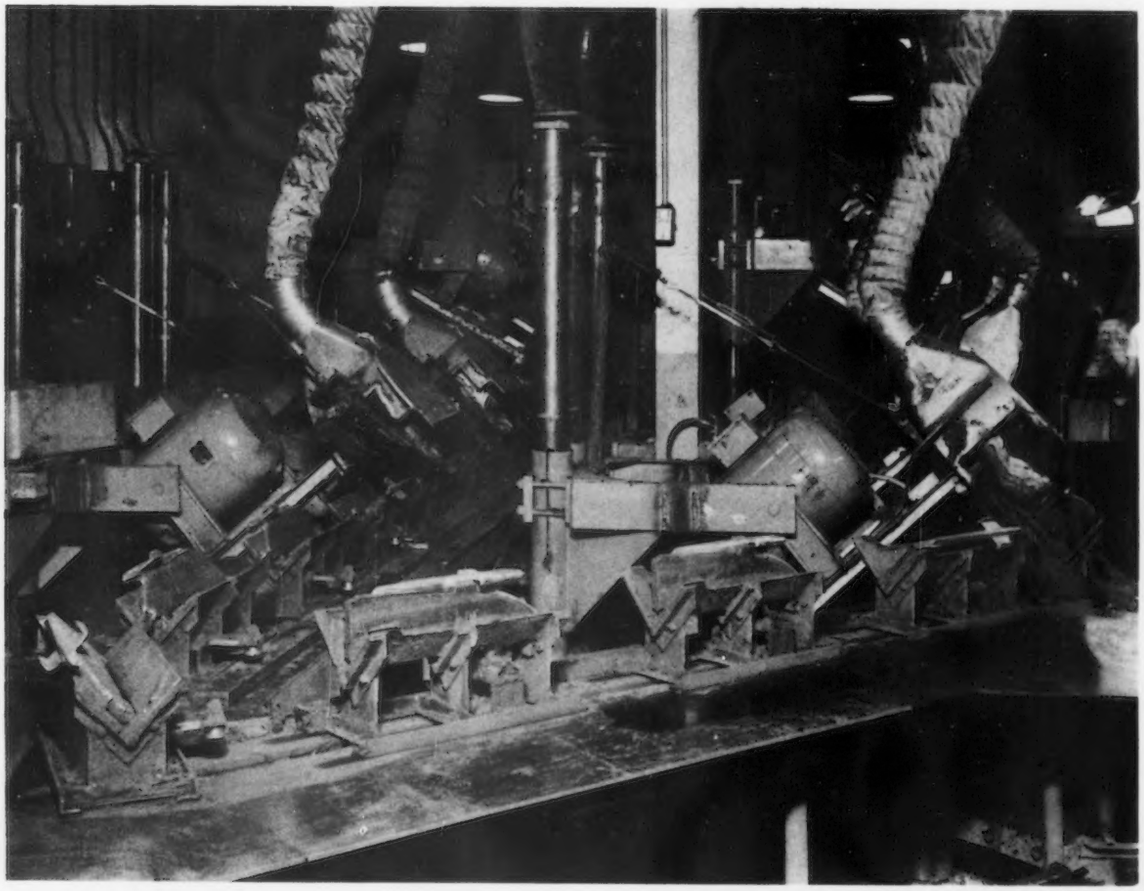


FIG. 6 - Fixture holds and turns two Pontiac castings for buffing under an inclined wheel.

FIG. 7 - Fixtures holding hood ornaments are advanced by a chain around a closed track under a series of 10 buffing wheels in this unit.



five pieces an hour are buffed and, while one set is being buffed mechanically, the operator has time to do a small amount of hand touch-up work on the prior pair, using an adjacent buffing lathe.

Considerable automatic buffing of hood ornaments is done on special machines in which fixtures are advanced by a chain either in a straight line or around a loop. During this traverse, the castings pass under successive buffing wheels each of which is set at the angle required for one particular surface of the casting held in the fixture. When a straight line setup is used, one man loads fixtures and places them on a track for advance by the chain while a second operator removes and unloads the fixtures at the end of the track, placing them on a belt for return to the starting end. As the return belt can run three times as fast as the chain, the machine can be kept in capacity operation with fewer fixtures than if these are returned by the chain.

In the latest Gerity machine of the chain advance type, fig. 7, the chain follows a closed horizontal track. During one circuit, the fixtures are buffed by as many as ten wheels if all ten heads are in use. The machine can be operated by one man if all ten heads are needed, or by two men if the work is ready for removal after passing five heads. In either case, however, an extra man is required to change stick compound.

Heads on the unit, used for buffing Oldsmobile hood ornaments, are so designed that air operated pistons and cylinders control the pressure exerted by the buff against the work. This pressure can be adjusted to suit the condition met at each buffing station. Fixtures are designed to fit the casting and to lock and unlock automatically after hand loading. Motion is continuous, but ample space is provided for loading and unloading in end areas.

Because of the shape of the hood ornament, it is best handled by a fixture whose angular position in reference to the carrier is varied automatically during the complete circuit of the machine. Loading is done with the fixture in a vertical plane, fig. 7; but, before the first wheel is reached a roller linked to the holder flops this against one side of a V-shaped supporting trough where the holder rests securely during passage under five wheels that buff the faces which are then uppermost. At the opposite end of the machine, the roller engages another cam that turns the holder against the opposite face of the trough for support during traverse under the second set of five wheels.

Several other buffing setups are employed, some of them standard semiautomatic machines such as dial type buffers having up to four wheels each; but the foregoing examples are typical of the semiautomatic installations, differing from those found in most plating plants, used by Gerity to achieve economical buffing.

. . . NEW BOOKS . . .

"Modern Metallurgy for Engineers," by F. T. Sisco. Revised and enlarged edition of this book provides a broad outline of the whole field of engineering metallurgy, both ferrous and nonferrous. Evaluations of the different metals and alloys in engineering applications are provided. Pitman Publishing Corp., 2 W. 45th St., New York. $5.00. 499 p.

* * *

"Physics of Metals and Alloys," by Walter Boas. Book, based on a series of lectures in physical metallurgy, is written for chemists and metallurgists to serve as a general introduction to the physics of metals and, in general, the effects of crystal arrangement on the properties of poly-crystalline aggregates. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. $3.50. 193 p.

* * *

"Design of Metal Cutting Tools," by F. L. Woodcock. Economics, cutting tool materials, elements of cutting, maintenance and cutting fluids are discussed in the first section of the book under fundamentals of design. Individual tools, including broaches, drills, form tools, hobs, counterbores and countersinks, punches and dies, reams, shaper tools, single points and threaded tools are described in the second section classified as details of design. McGraw-Hill Book Co., 330 W. 42nd St., New York 18, $5.00. 406 p.

* * *

"From the Ground Up," by P. M. Tyler. Technology and economics of the mineral industries of the U. S. are discussed in book. Proposals for improving conditions in the industry and thereby contributing to national welfare are also set forth. McGraw-Hill Book Co., 330 W. 42nd St., New York 18. $3.50. 248 p.

* * *

"Modern Metallurgy of Alloys," by R. H. Harrington. Reasons for alloy properties and behavior are discussed with subjects covered including fundamental factors for alloying, positive alpha boundary, peritectoid reactions, beta tungsten structure, lattice vacancies and other topics. John Wiley & Sons, Inc., 440 Fourth Ave., New York 13. $3.50. 209 p.

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"List of American Standards." List of all national standards, giving prices, approved by the American Standards Assn. includes dimensions for machine tools and parts, rating and testing of electrical equipment, dimensions and identification of pipes and piping, chemical, civil engineering and construction, and other standards. American Standards Assn., 70 E. 45th St., New York 17. Free. 24 p.

* * *

"Manual of ASTM Standards on Refractory Materials." Manual contains the latest approved form of ASTM standard and tentative specifications, classifications, methods of testing and defintiions pertaining to refractories. American Society for Testing Materials, 1916 Race St., Philadelphia 3. Paper cover, $2.50. Cloth cover, $3.15. 264 p.

Ceramic Group Explores High Temperature Applications

• • •

. . . 50th ACS annual convention emphasizes importance of pure oxide refractories and ceramic-metal combinations in jet propulsion, rocket and atomic energy programs. . . . Practical steelmaking role highlighted by discussions of performance of refractories in blast furnace practice and in openhearth ladles.

• • •

THE 50th annual convention of the American Ceramic Society, held recently in Chicago, yielded some interesting technical presentations relating to the role of refractories in steelmaking and in the manufacture of high temperature materials. Several of the significant papers delivered at the Refractories Div. sessions are reviewed briefly herein, with emphasis placed on the pure-oxide refractories and cermets for service at elevated temperatures.

In a paper entitled "Properties and Uses of Pure-Oxide Heavy Refractories," O. J. Whittemore, Jr., Norton Co., Worcester, Mass., indicated that the constant demands of the metallurgical and petroleum industries as well as research groups on jet propulsion and atomic energy have caused greater research and investigation of the pure oxide type refractories primarily Al_2O_3, BeO, MgO, ZrO_2 and ThO_2. Small amounts of the rare earths have also been studied, but not extensively.

Of the five oxides: (1) Alumina is stable in both reducing and oxidizing conditions to 3630°F, (2) magnesia is stable in oxidizing conditions, but to 5070°F, (3) zirconia is not volume stable so it must be stabilized in the cubic system by small additions of MgO or CaO with slight loss in refractoriness; it is still highly refractory and good in oxidizing or slightly reducing atmospheres, (4) beryllia is slightly volatile in the presence of water vapor but is good in either atmosphere to around 4530°F, and (5) thoria is very heavy, slightly radioactive, and expensive, but good to nearly 5430°F in oxidizing or slightly reducing conditions. All five oxides are slip cast, extruded or pressed into light refractory shapes such as crucibles, tubes, muffles and combustion boats in regular commercial production. The three cheapest and most available oxides: MgO, Al_2O_3, and ZrO_2 (stabilized) are used for the manufacture of heavy refractories. These products are of 97 pct or better purity, electrically fused material fired to Cone 35 (3200°F).

Thermal conductivity data for these materials indicates some advantages over other materials as high temperature insulation. The values were measured, by G. B. Wilkes of the Massachusetts Institute of Technology, between 600° and 2000°F, then extrapolated to 2600°F. The curves had the following order of decreasing conduct-

ivity: magnesia, alumina, alumina insulating brick, and zirconia insulating brick. The beneficial part of the results is that the conductivity is decreasing with temperature for all of the special refractories except the fireclay, a clay bonded alumina and the zirconia bricks. This indicates that, at high temperature, (2500°F approx.) alumina "bubble" insulating brick would provide better insulation than would regular fireclay.

For determining the resistance of these pure oxides to high temperature loads, a small oxyacetylene furnace having a 4 in. ID was constructed to test a 1 in. cubic sample. Either a magnesia or zirconia lining can be used, depending upon the material being tested. Each material was tested under 10 and 40 psi loads with the results given in table I.

In addition, a specimen of magnesia from a factory (rather than laboratory) produced shape was tested and showed a failure temperature of 4389°F under 10 psi load. All failed by shear except the magnesia.

In volume stability tests, 1x1x2-in. specimens were reheated for 1 hr at various temperatures. Some results are presented as follows:

Alumina at 3452°F	**0 — 0.3 pct**
Magnesia and zirconia at 4172°F	**0.3— 4.0 pct**
Magnesia and zirconia at 4352°F	**2.4—11.5 pct**

In regard to heat transfer and storage, indications are that the zirconia is rather low and the alumina and magnesia high.

The following uses and limitations are suggested:

Alumina is suitable in either reducing or oxidizing atmospheres to 3452° F. A long tubular hydrogen atmosphere furnace was shown in cross-section. It had a ¾-in. alumina tube surrounded by 1½ in. of alumina grain, then 4¼ in. of alumina insulating brick and 4½ in. of alumina insulating brick and 4½ in. of fireclay inlating brick.

Magnesia is satisfactory to 4172°F in oxidizing conditions and to only 3092°F in reducing conditions. It is good under load, but any failure is in the form of a gradual deformation. The insulation, if bubble zirconia, should not be used above 3632°F.

Zirconia is good in either oxidizing or slightly reducing atmospheres to 4352°F. In strong reducing conditions it will decompose, especially in contact with nitrogen, hydrogen or carbon, to form compounds. The insulating zirconia brick have been used to around 4415°F. One further limitation is the low resistivity of zirconia at high temperatures which would cause electrical resistors to short out.

Problems relating to the production and testing of cermets were discussed in three papers: "Furnace Equipment for Cermet Fabrication and High Temperature Testing" by A. R. Blackburn, Engineering Experiment Station, Ohio State University, Columbus, Ohio; "Simplified Tensile-Testing Machine For Use With Refractory Materials," by H. R. Lowers, Engineering Experiment Station, Ohio State University, Columbus, Ohio; and "Wetting of Alumina by Nickel, Cobalt, Iron, Chromium and Chromium-Boron Crystals," by Thomas S. Shevlin, Engineering Experiment Station, Ohio State University, Columbus, Ohio.

TABLE I

Resistance of Pure Oxides to High Temperature Loads

Material	Failure Temperature, °F	
	10 psi	40 psi
Alumina	3497	3110
Magnesia	4061	3920
Zirconia (1)	3830	3542
Zirconia (2)	4415	3848

Blackburn pointed out that, with the development of ceramic bodies having unusual properties, composed of metal powder and a pure oxide (in Germany) and the development of silicon coated graphite (in the United States) during the war, research on these materials for use in jet and rocket propulsion has been continued on a broad scale. While metal inclusions in ceramic materials are usually considered detrimental impurities, additions of approximately 30 pct metal and proper heat treatment will produce thermal shook resistant, high strength bodies. These bodies may also have some desirable electrical properties since they are semiconductors.

The heat treatment of these bodies is the most difficult part of their fabrication. The atmosphere and temperature are determined by the metal used. At first it was believed that strong reducing conditions (less than 1 part per million of oxygen) were necessary, whereas later work indicated the desirability of a pre-oxidation of the metal and controlled atmospheres to retain a slight amount of oxide film.

Three furnaces for firing these materials were described, the most suitable being a molybdenum resistor type having a 28 in. tube, 2¾ in. in diam, wound with 70 ft of 0.050 in. wire. Only the tube has a special atmosphere which minimizes the time and amount of gas necessary to make a run. Other furnaces included a silicon carbide resistor tube lined with a porcelain tube and an induction furnace with a graphite secondary. Neither gave as good results as the molybdenum resistor type.

The nitrogen firing atmosphere purified in three stages, first through copper turnings at 1000°F to remove the oxygen, then through activated alumina to remove moisture, and through calcium metal at 1500°F to further insure pure nitrogen.

In addition to the three furnaces for firing, two for testing by cross loading were described. One was for rapid tests, while the other was for tests of around 1000 hr, where creep was to be measured. Both are heated by silicon carbide resistors and are large enough to hold several samples at once.

The general indications in this paper are that the fabrication of metal-ceramic, or cermet bodies, is no longer a problem.

Lowers emphasized the fact that one of the major requirements of ceremic materials in jet aircraft is resistance to high tensile stresses. While these ceramic materials generally give quite low values of tensile strength, much of the

cause for low values can be placed on the apparatus and the specimens used. The major detriments to good tensile tests, especially at elevated temperatures, are warpage of the apparatus and misalignment of specimen and apparatus. The latter is probably the most important up to 2400°F.

A new design was therefore made with special features, a four-jaw chuck, and guide rods, to prevent misalignment. To prevent warpage, the entire assembly was mounted on a heavy horizontal bed plate with slots in which the movable head could travel. The heads are hollow cast aluminum and are watercooled. One head is actuated by a pneumatic cylinder operated by nitrogen and buffered by oil. The value of the frictional losses was evaluated by steel samples with strain gages attached.

For high temperature tests, a small (5x6x6 in.) platinum-wound furnace is slipped over the specimen. This permits heating the specimen to 2400°F with less than 10° difference in temperature over the length of the test section. The specimens are 10 in. long by ⅜ in. diam with a 1½ in. long by ¼ in. diam (min) neckdown at the center.

Tests are run at a rate of 20,000 psi per min after holding the specimen at temperature for 15 min. Only 2.8 pct deviation of values was found on a pure oxide body with the following strength values:

Temperature, °F	Strength in Tension, psi
1600	19,000
2200	14,000
2400	4,000

When slower loading rates (below 4000 psi) are used, lower values are obtained.

Shevlin indicated that in the fabrication of ceramic-metal bodies the choice of suitable combinations can largely be done from a theoretical consideration of crystal systems, ionic radii, etc. However, a simple empirical solution is to set pellets of metal on top of alumina blocks, fire them, and observe the relative reactions. This was done with chromium, iron, nickel, cobalt, and chromium-boron at 2700°, 2880°, 2900°, 3000° and 3500°F. The chromium, nickel, cobalt and iron wet the alumina quite well in the 2900° to 3000° range.

Color pictures of the alumina tiles and metal pellets showed the results very satisfactorily. In addition, some photomicrographs of the interfaces and some slides of pertinent phase diagrams were presented.

The atmosphere is of greatest importance; a strong reducing condition is not as desirable as slight oxidation and controlled atmospheres to keep that degree of oxidation. Either static hydrogen or argon bubbled through ice water were suitable for the purpose.

The role played by refractories in blast furnace practice was explored by Lawrence H. Van Vlack, formerly of the metallurgical division, Carnegie-Illinois Steel Corp. (now on leave at the University of Chicago), in his paper "Chemical and Mineralogical Changes in Stack and Hearth and Hearth Refractories of a Blast Furnace."

The campaign life of a blast furnace is almost always determined by the life of the refractories with which it is lined. While many studies have been made of the attack of single substances on refractory bricks (usually on a laboratory scale) the studies of chemical attack and resultant mineralogical changes in large metallurgical units are few. For this reason a thorough study was made of a blast furnace, which had been shut down after producing 2.3 million tons of iron.

The lining was high-heat duty brick which showed bad erosion in the stack and mantle and some slag attack at the hearth.

Of the causes of chemical attack, the alkalies are predominant. Up to 31 pct of alkalies were found in some of the brick. Of the two common alkalies, the potash predominated over the soda. Carbon and zinc were also found especially toward the middle of the bricks where up to 8 pct C was determined. Among the minerals found were albite, leucite, sodium and potassium alumina silicates, tridymite, cristobalite, corundum, amorthite and some cyanides. In the case of the latter as much as ½ pct N_2 was determined by chemical analysis. This indicates the previously reported reactions of carbon monoxide and carbon dioxide on refractories in which cyanides, and perhaps zinc sulfide, act as catalysts.

Slag attack around the hearth was considerable and in that area large glassy phases were found in the bricks. Also indications of the reduction of silica to metal were present. This is a definite detriment to refractory life and probably an aid to salamander growth.

The results would indicate the following recommendations; (1) more water cooling be used in higher parts of the furnace, (2) lower porosity brick be used in the stack to prevent some of the erosion and attack, and (3) carbon refractories be used in the bottom to cut salamander growth and to alleviate the problem caused by lack of cooling in that area.

Discussion of this paper indicated agreement on the severity of silicon and silicon oxide attack, but disagreement on the causes of salamanders. While not much salamander growth is found when carbon blocks are used, it is not believed that the refractories cause that growth. Dr. R. B. Snow of Carnegie-Illinois presented a formal discussion which suggested (1) the use of a nepheline brick which would probably not absorb more alkalies, and (2) care in the specification of carbon bottoms especially in western areas where the iron ore is already low in carbon and might absorb carbon from the lining.

Factors influencing ladle and nozzle life were discussed by R. B. Snow and J. A. Shea, research laboratory, U. S. Steel Corp., Kearney, N. J., in their paper "Mechanism of Erosion of Nozzles in Openhearth Ladles."

Thirty different nozzles were tested in a special holder on the bottom of a 100-ton, plus, ladle. Three general types of ceramic materials were used: (1) Cone 19 commercial fireclay nozzles (correctly, under and over-fired), (2) Cone 28 fireclay nozzles, and (3) Cone 38 kyanite nozzles. The apparent and true porosities are as follows: Cone 19 fireclay, 13.5 pct and 24 pct respectively; Cone 28 fireclay, slightly lower; and Cone 38 kyanite, 20-25 pct and 25 pct, respectively. Various other properties and the

chemical compositions are presented. Greater variety of compositions is shown in the case of the steel where some SAE 3000 series, 1040, X1335 and X1315 both coarse and fine grained were used. After one series, the increases in nozzle diameters were as follows:

Cone 19 Fireclay—24.5 pct, 17.8 pct and 21.3 pct, etc.
Cone 28 Fireclay—16.0 pct
Kyanite—7.8 pct (decrease)

Various types of steels gave erratic results. Rimming steel caused a 40 to 50 pct increase in nozzle diam, while 1040 only showed around 5 pct increase; SAE X1335 coarse grained steel seriously attacked Cone 28 fireclay nozzles, but had less effect on the Cone 19; SAE X1315 (C.G.) exerted a moderate effect on Cone 19, but was harmful to the Cone 38 kyanite. In some cases the coarse grain steel was easier on the nozzles than was the fine grain and in other cases the opposite was true. In general, the erosion seemed to be proportional to the porosity of the nozzles.

No definite recommendations, however, can be made, as each case had different determining factors. For example, good results have been reported with highly refractory, low porosity nozzles such as zircon and kyanite and with inserts made of these materials. On the other hand, less dribble was obtained with the Cone 19 fireclay in these experiments than with the more highly refractory shapes. This leakage can be corrected by soaking the nozzles in tar; however, that is an undesirable solution.

All other factors being equal, high refractoriness and low porosity seem to be the best solution to getting longer ladle and nozzle life.

Strainers Protect Costly Hydraulic Systems

COUNTLESS pipe line breakdowns and clogings, leading to serious manufacturing difficulties, are traceable to minor causes. Downtime is sometimes regarded as an unpredictable plant emergency that cannot be prevented. However, a sensible approach to the problem will reduce it to minimum. Various factors are involved such as inspection procedures, maintenance of equipment, proper plant layout, correct design, and utilization of proper protective devices.

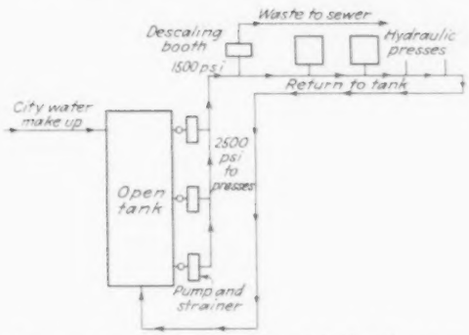
Among the protective devices are adequate straining devices. Trouble can be avoided by these guardians of hydraulic systems if they are properly specified and maintained, according to John H. Schmid, vice-president in charge of engineering of the J. A. Zurn Mfg. Co., Erie, Pa. A demonstration of the importance of the function performed by strainers is illustrated by a particularly disastrous experience which occurred in a stamping plant and press shop, Toledo, where a water operated hydraulic operation involving a forging and descaling operation broke down, costing about $44,000.

Previous to the installation of the descaling system, the main hydraulic pumps, totally enclosed vertical triplex power pumps, had caused some trouble as a result of accelerated valve wear. It was only after the installation of the descaling operation in the system that the real cause of the trouble was learned and corrective measures adopted.

The descaling booth was employed to remove billet scale. This descaling required about 5 sec and was accomplished by a water spray at 1500 psi. The descaling nozzles plugged up and failed to operate after a few hours. This foriegn matter, which plugged the nozzle, was principally dirt from an open tank which cooled the water upon its return from the hydraulic forging operation and packing lint.

In addition to clogging up the spray nozzles, this dirt and packing lint from the hydraulic system also caused accelerated wear of the pumps. This was a large operation and involved several pumping units and a number of hydraulic presses.

Numerous breakdowns occurred in the descaling system before the trouble was located and



Strainers on this water-operated hydraulic press installation eliminated costly breakdowns.

each breakdown partially idled a department of 10 to 50 men from 2 to 8 days at a loss of $200 per hr. On each breakdown, repairs cost $3000 to $5000. Conservatively, the failures involved $8800 each in lost time and repairs, which made a total of approximately $44,000 for five shutdowns.

The installation of duplex strainers of proper size, rated capacity and perforations, in the suction of the pumps prevented further misfortune. These strainers were integral two-valve units and provided continuous flow operation since one valve could be shut down and cleaned of impurities while the other valve is still in operation. A flow diagram of this installation is shown in the accompanying illustration.

Hydraulically-operated equipment is not purchased from the same source as the various other units in a production setup. With these split sources there is no responsibility for proper installation of miscellaneous equipment.

The only practical remedy, according to Mr. Schmid, is the establishment of a rigid company policy that protects specified pumping units, positive displacement meters, heat exchangers, solenoid and pressure controlling valves and other vulnerable close tolerance equipment by the installation of properly designed strainer with the proper pressure, temperature, capacity, perforation basket, metals and other parts and requirements to do an adequate job of straining entrainment from pipelines.

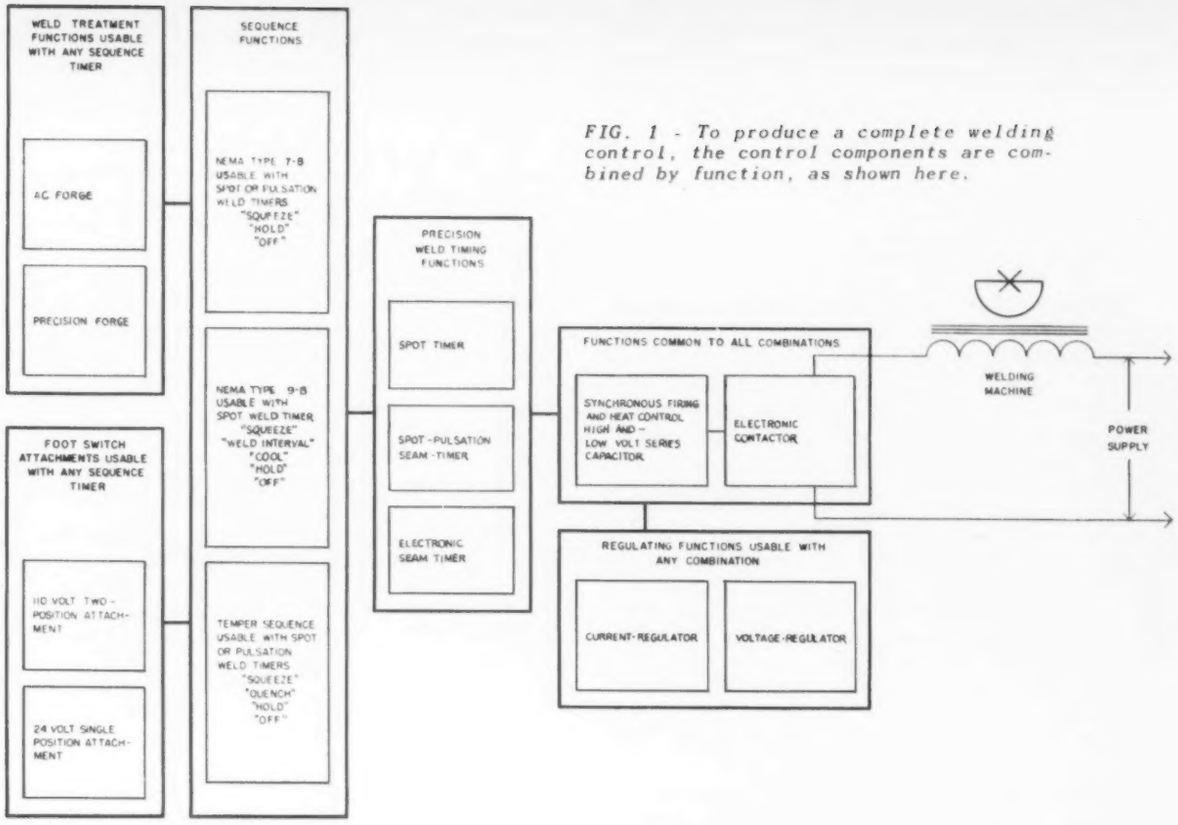


FIG. 1 - To produce a complete welding control, the control components are combined by function, as shown here.

Functionalized Electronic C

By W. E. LARGE
Electronic Control Engineer,
Westinghouse Electric Corp., Buffalo

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FUNCTIONAL design of resistance welding controls makes possible hundreds of combinations for sequencing and weld timing from only eight factory-wired main panels and six supplementary subassemblies. This principle of design makes possible an electronic control that can be modified to meet changing needs by the simple expedient of replacing the timer or sequencing panel, or both, and modifying the heat control.

If it should be desired to change a control that had been purchased originally to spot and projection weld light and medium thickness mild steel to a seam welder for mild steel, only two changes would be necessary. The spot weld timer panel would be replaced by a seam timer panel, and the sequence panel would be disconnected electrically.

This functional breakdown of the electronic circuits achieves a unified design of synchronous-precision controls that offer many advantages over the old controls. First and foremost is the fact that all the elements for a particular type of control can be assembled in a standardized cabinet for side mounting to the welder or for floor mounting.

The significance of this functionalization of control elements is further emphasized when the factors that determine the ultimate control are considered. First of these is type of weld—spot, seam or pulsation. The next factor is material being welded—mild steel or alloy steel. And finally there is the factor of weld quality—maximum strength and consistency with little regard for appearance or minimum strength with little of flash or indentation. The problem is further complicated by the fact that many applications

FIG. 2 - Functionalized design permits grouping standard panels making possible many combinations of control. At left is a standard spot welder control, while in the center the panel is being removed to illustrate this feature. At right, the electronic contactor is in the lower cabinet and the synchronous precise control in the upper cabinet.

Controls For Resistance Welding

Through the use of eight main and six supplementary assemblies hundreds of combinations for sequencing and weld timing can be attained. Also, the modification of the controls is relatively a simple matter. These controls and their functions are described in this article.

require a synchronous-precision type of control with its attendant accuracy of weld time and fine degree of current control. In addition, the sequencing of the mechanical operation of the welding machine must be controlled. This involves precise timing of the duration of current flow, synchronous switching of the welding current, current adjustment and regulation, and weld treatment.

The various functions under these classifications are shown in table I, while several combinations of functions used for various types of welding are tabulated in table II.

It is evident that even in the field of synchronous-precision controls it is necessary to combine a large number of control functions in many ways to correctly satisfy control requirements for the individual applications of resistance welding.

The purpose behind the design of the new functionalized units has been to provide controls that will perform all of the different functions necessary for correct control of the various methods of welding. The advantages of uniform appearance, standard cabinet dimensions, integral mounting with the welding machine and improved accessibility have been obtained by dividing the control functions into electrical and mechanical subassemblies, any group of which can be assembled quickly and easily into one cabinet.

Fig. 1 shows all of the functional subassemblies and their relations to each other. The functions fall into three classes: (1) Those which are common to every combination unit; (2) the

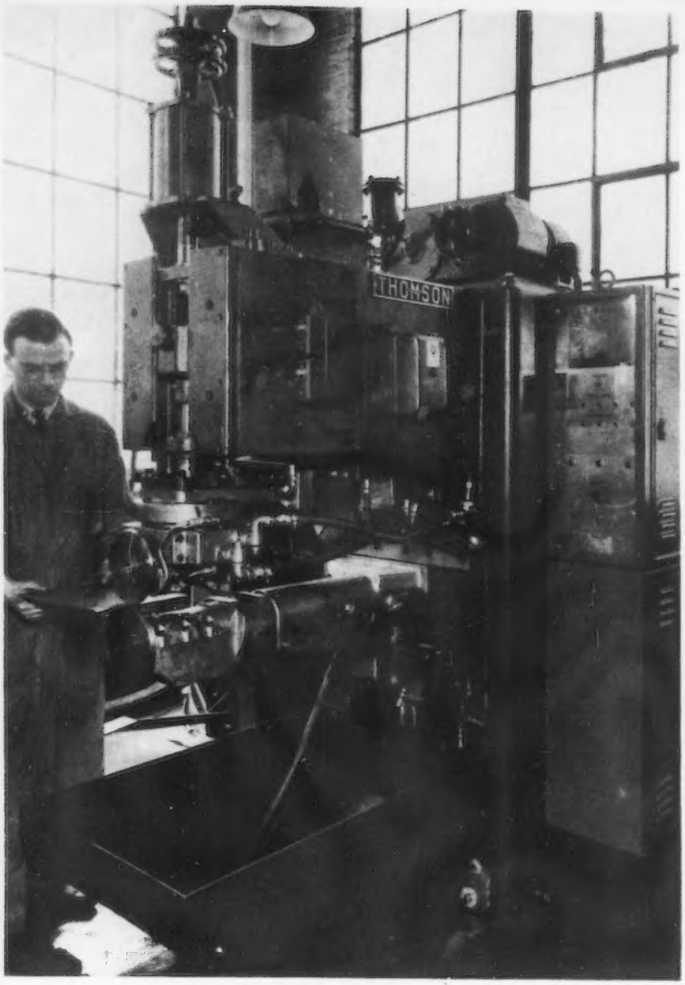


FIG. 3 - The upper section of this synchronous seam welder control, side-mounted to a standard seam welding machine, is hinge-mounted to the side of the welder so it can be swung out.

functions which are different or optional in the various standard combination units; and (3) special functions not included in standard combinations.

The *electronic contactor* switches the welding current on and off, a function common to all controls. The contactor consists of the ignition power control tubes and protective devices. It provides a noiseless and reliable switch.

The *heat control and firing circuit* controls ignitrons in the electronic contactor and makes possible gradient adjustment of the welding current from 20 to 100 pct of maximum, a function common to all controls.

The *timing function* controls the duration of flow of the welding current. Any of three different combinations are available. (1) The seam timing panel provides precision control of the "heat" and "cool" periods for seam welding. (2) The spot timing panel provides for precision control of the weld time of a spot weld. (3) The spot-seam-pulsation timing panel is a universal precision timing panel that can be set for any of three types of timing. It controls the duration of a spot weld, the heat and cool periods of a seam weld, or a definite number of pulsations of welding current for pulsation welding. In addition, the timing circuit can be adjusted to deliver a continuous welding current, for a seam weld in which no cool time is required.

Two sequence control panels are used to obtain the proper sequence and speed of the mechanical operations of the welding machine.

The NEMA standard type 7-B sequence panel provides control of the squeeze, hold and off periods and is usable with either the spot timing circuit or the spot-seam-pulsation timing circuit to obtain complete control of the various intervals comprising the spot weld cycle, or pulsation weld cycle requiring a precision cool time. The NEMA standard type 9-B sequence panel controls the squeeze, weld interval, cool, hold and off periods and is used only with the spot timing circuit to time the intervals comprising a spot weld cycle, or a pulsation weld cycle in which a precision cool time is not necessary.

Two regulating panels have been designed and incorporated into certain of the standard combination controls. Frequently conditions, such as variations in power supply voltage, changes in welding circuit impedance during the weld, or a critical application, make it necessary to em-

Table I Functional Classification of Control Components

CONTROL AND SEQUENCING OF THE MECHANICAL OPERATION OF THE WELDING MACHINE	PRECISION TIMING OF THE DURATION OF CURRENT FLOW	SYNCHRONOUS SWITCHING OF THE WELDING CURRENT	CURRENT ADJUSTMENT AND REGULATION	WELD TREATMENT FUNCTIONS
SQUEEZE TIME	WELD TIME (FOR SPOT WELDING)	ELECTRONIC CONTACTOR EMPLOYING IGNITRONS	STEPLESS CURRENT CONTROL	FORGE TIME
HOLD TIME	HEAT TIME AND COOL TIME		AUTOMATIC ELECTRONIC CURRENT REGULATION	QUENCH TIME
OFF TIME	IMPULSE COUNTING OR WELD INTERVAL TIMING (FOR MULTI-IMPULSE WELDING)			PREWELD AND POST-WELD TIME
				PREWELD AND POST-WELD CURRENT CONTROL

Table II Typical Combinations or Grouping of Control Functions

TYPE OF WELD	MECHANICAL CONTROL AND SEQUENCE FUNCTIONS	PRECISION TIMING FUNCTIONS	SYNCHRONOUS CURRENT SWITCHING FUNCTIONS	CURRENT ADJUSTING AND REGULATING FUNCTIONS	WELD TREATMENT FUNCTIONS
HIGH QUALITY SPOT AND PROJECTION WELDING OF LIGHT AND MEDIUM THICKNESS MILD STEEL	SQUEEZE TIME HOLD TIME OFF TIME	WELD TIME	ELECTRONIC CONTACTOR	STEPLESS CURRENT CONTROL	
SPOT WELDING THICK MILD STEEL	SQUEEZE TIME HOLD TIME OFF TIME	HEAT TIME, COOL TIME AND IMPULSE COUNTING (FOR MULTI-IMPULSE WELD)	ELECTRONIC CONTACTOR	STEPLESS CURRENT CONTROL	
LONGITUDINAL SEAM WELDING OF STEEL		HEAT TIME COOL TIME	ELECTRONIC CONTACTOR	STEPLESS CURRENT CONTROL AUTOMATIC CURRENT REGULATION	
SPOT WELDING OF S.A.E. X-4130 +1020,1030,1040, 1050, STEEL	SQUEEZE TIME HOLD TIME OFF TIME	WELD TIME	ELECTRONIC CONTACTOR	STEPLESS CURRENT CONTROL	QUENCH TIME POSTWELD TIME POSTWELD CURRENT CONTROL

ploy such devices for maintaining a constant magnitude of welding current. The current regulator circuit takes its indication directly from the welding current and will maintain the welding current essentially constant for variations, from any source, which would normally cause the welding current to change as much as 20 pct. The voltage regulating circuit performs the same function as the current regulator, except that it will correct for changes in the supply voltage only.

As pointed out, when welding certain materials the weld cycle may include intervals during which the material is preheated, quenched or tempered. Control for these functions is not included in the standard combination units, but can be supplied in the standard control cabinet. These weld treatment functions include a temper sequence timer, and standard and precision forge timing circuit controls.

The forge timing circuit is a control which times the application of forging pressure with sufficient accuracy for most welds requiring forging.

The precision forge timing circuit is an extremely accurate timing control which permits application of a high forging pressure to the weld at a definite time after the start of the welding current flow.

The temper sequence timer panel combines the functions of the NEMA Type 7-B with an additional quench time function and permits adjustment of the duration and magnitude of a preweld or postweld current.

Blank panels of standard dimensions are available for the mounting of instruments, or extra heat or time adjustors.

Optional attachments include standard combination controls connected for operation by a 110-v single position foot switch, or with attachments for either a 110-v two position foot switch or a 24-v single position foot switch.

Using the functional subassemblies, a large number of combinations are possible. It has been

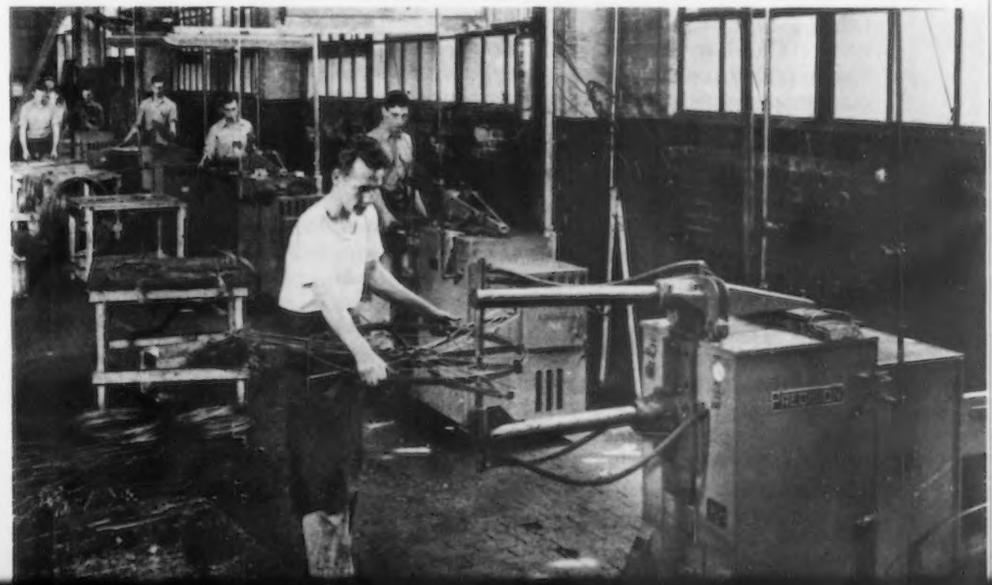


FIG. 4 - Mounted to the rear of these standard rocker arm welders are nonsynchronous electronic controls.

TYPE	PRECISION TIMERS				SEQUENCE CONTROLS		REGULATORS		
	ELECTRONIC CONTACTOR	WELD	SEAM WELD	PULSATION WELD	7-B SEQUENCE	9-B SEQUENCE	HEAT CONTROL	VOLTAGE	CURRENT
S1H	X	X					X		
S2H	X	X			X		X		
S2C	X	X			X		X		X
S2V	X	X			X		X	X	
S3H	X	X				X	X		
S3C	X	X				X	X		X
S3V	X	X				X	X	X	
S4H	X		*	*	X		X		
S4C	X		*	*	X		X		X
S4V	X		*	*	X		X	X	
S5H	X		X				X		
S5C	X		X				X		X
S5V	X		X				X	X	
* INCLUDE SELECTOR SWITCH TO CHANGE FROM SEAM TO PULSATION WELDING									

Table III, Control Components Used in 13 Different Standard Types of Low Voltage Synchronous Precise Controls

found that certain combinations will cover the majority of applications and these combinations have been designed as standard types. The standard combinations, all of which meet NEMA specifications of performance and construction, are shown in table III.

Fig. 2 illustrates various combination controls, showing the different functional components as listed in table II. The lower cabinet contains the electronic contactor and power connections. The upper cabinet contains all other control equipment, mounted on removable panels.

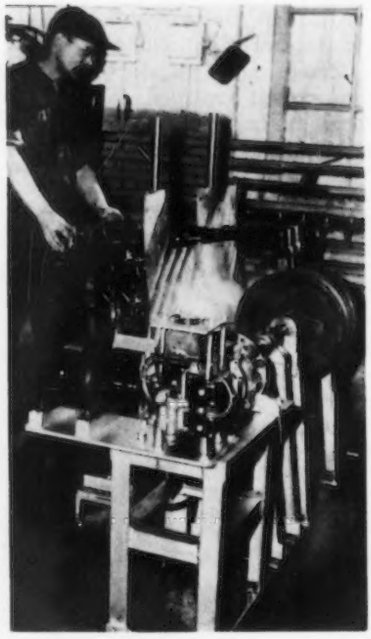
These panels are interconnected by means of plugs and any desired combination is quickly obtained by installing the proper functional panels. When side mounted on the welder, as in fig. 3, the lower cabinet and the left side door of the upper cabinet are fastened to the machine. Mounted on this door by heavy hinges, the upper cabinet can be swung away from the welder to give complete access to all connections and wiring on the panels. All combinations are uniform in appearance. The parts used are common for all combinations as far as possible.

Most of the functional subassemblies can be utilized without changes in combination controls for high voltage service. A companion line of nonsynchronous combination controls is available, also incorporating the many advantages present in the synchronous-precision combination controls. This type is illustrated in fig. 4.

Flame Hardening Crane Parts

FLAME hardening of gears, jaw clutches, wearing strips, rollers, sheaves, chain sprockets and beveled gears is being done by the Thew Shovel Co., Lorain, Ohio. In the production of these components for cranes the extended use of the oxyacetylene process of flame hardening has resulted in increased wear resistance and a generally better production, according to company engineers.

In the flame hardening application shown in the accompanying illustration, the triple torch setup, using Airco style 4383 torches and specially designed tips, permits the simultaneous hardening of three sheaves. The flame hardening process permits increased resistance on the throat of the sheave, where the wear is obviously greater, thereby increasing the work life of the sheave. By thus treating only the desired area, they were enabled to localize the hardness where needed. This leaves the balance of the sheave ductile enough for proper machining.



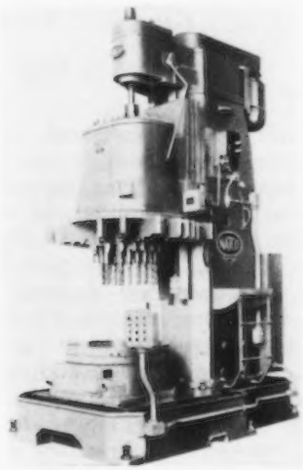
This triple torch setup permits the simultaneous flame hardening of three sheaves for the Thew power crane

New Production Ideas . . .

Multidrillers and tappers, a thread grinder, rocker arm welders, cutoff machines, a core baking tunnel, rotor pumps, air motors, a sand conditioner, a drill sharpener, a jig grinding attachment are new and improved products featured this week. Material handling equipment described includes mobile cranes, bucket elevators, and dump trucks.

Multidrillers and Tappers

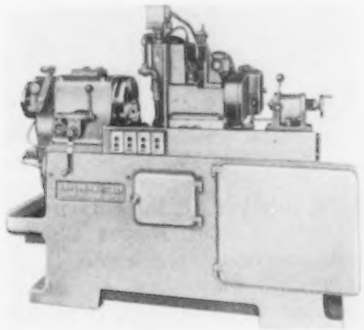
THREE new Holesteel adjustable multi-spindle drillers and tappers have been announced by *National Automatic Tool Co.*, Richmond, Ind. These machines are equipped with electrically controlled hydraulic feed systems, providing infinite feed range and pick-off type change gears, to permit a wide selection of spindle speeds. Each model can be supplied with either



a small area base used for adjustable table applications or for stationary fixture mounting, or a larger area base suitable for rotating and sliding type fixture application. A heavy box section column prevents deflection under the heavy thrust loads encountered. The neck is an anti-friction cascade lubricated gear chest driven by V belts from a foot mounted vertical motor. The neck drives the adjustable spindle head and the hydraulic pressure pump. Adjustable spindle heads are of anti-friction mounted construction, in which each spindle drive has independent spindle speed change gears, providing high, low, and neutral changes. Adjustable spindles may be located in any position within the area of the head and a drive angle of 35° or less.

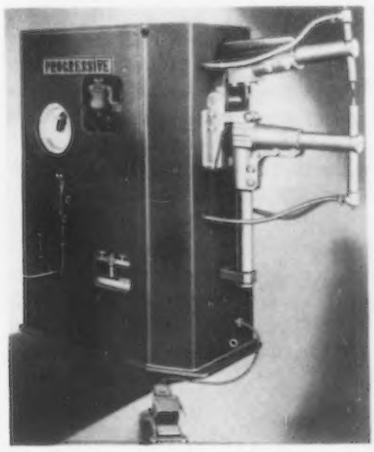
Semi-Automatic Thread Grinder

A MASTER roll to maintain the life of the crusher roll which in turn crush-forms the grinding wheel with a wide variety of multi-thread patterns which are transferred to the work, is the feature of the redesigned semi-automatic thread grinder offered by *Hanson-Whitney Machine Co.*, Hartford, Conn. All operations of the machine, except work loading, are automatically controlled. The multi-rib principle of crushing the thread pattern onto the grinding wheel is claimed to produce accurate, properly mated threads, closer limits, and size duplication at high speeds. Maximum threading is 2 in. in length in 1-1/3 revolutions of the work. The purpose of the master roll is to provide the means to transfer the original thread pattern, through the grinding wheel, to the crusher roll when the crusher roll pattern has been worn down. This method of correcting the form on the crushing roll eliminates removal of the roll for re-grinding. A crush-dressed multi-ribbed grinding wheel is said to produce the complete length of thread within the capacity of the machine in the time required to produce one thread with a single point grinding wheel. Threading and forming of heat treated material that is too hard to be thread-milled is listed as an advantage.



Rocker Arm Welders

AIR-OPERATED rocker arm welders in 30 and 50 kva capacities, with throat depths ranging from 18 to 36 in. for each capacity, have been announced by *Progressive Welder Co.*, 3050 E. Outer Drive, Detroit 12. The front part of the machine which carries the welding stresses is heavily reinforced welded steel. The rear part serves mainly as an enclosure and is provided with quick removable panels for access to the entire interior of the welder. The welders feature three independent water cooling circuits for transformer, lower arm, and upper arm. Sight gages show circulation through an opening in the side of the machine. Other features include a large



range of throat opening adjustment, externally accessible heat control, and high speed air valve permitting higher welding speeds. Water and air systems are completely piped to the rear of the machine.

Cutoff Machine

SPRUES and risers can be removed from bronze, aluminum, and iron castings with the swing frame cutoff machine designed by *Fox Grinders, Inc.*, Oliver Bldg., Pittsburgh 22, to complement the advantages of the flexible cutoff wheels now on the market. Used with the new machine which maneuvers through 180°, the wheels operate at a peripheral speed of 15,500 fpm, and cuts can be made to conform more or less closely to the contour of the casting. Large risers can be cut by using sawing action, thus maintaining minimum contact area, reducing power consumption, and lessening wheel wear. The machine is powered by a 7½ hp totally enclosed fan-cooled ball bearing motor and driven by two No. 128-B section V belts. It accommodates wheels 16x5/32x1 in.

Double Crank Presses

SHORT strokes, rigid box crown and deep bed make welded steel gap frame double crank presses suitable for use with fine blanking dies and for forming work requiring heavy load at the bottom stroke. Long or irregular sheets and strips can be fed either front to back or right to left in these presses manufactured by *Niagara Machine & Tool Works*, 637 Northland Ave., Buffalo 11. On geared presses, the back shaft does not cross the press, but is mounted in anti-friction bearings and entirely supported by the right hand upright. The pinion is supported between anti-friction bearings thus holding the back shaft in perfect alignment with the main gear. Other features include the Niagara 14-point engagement sleeve clutch, anti-friction bearings in the clutch wheel, air counterbalance for slide and a compensating and indicating brake. The presses are built in seven sizes ranging in capacity from 44 to 244 tons, each size made in five to six widths.

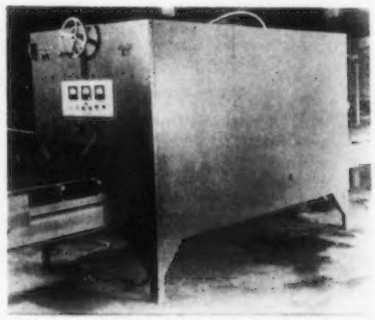
Tube Cutoff Machine

CUTTING tubing of any diameter or wall thickness within the range of the machine in less than 1/3 sec per cut is claimed for the new cutoff machine announced by *Grieder Machine Tool & Die Co.*, 324 N. Maple St., Bowling Green, Ohio. The cutting method produces a minimum of burr, and maintains a quality cut with no tube distortion. The cycle of the machine is

12,000 cuts per hr, the cutting time for various sizes, shapes and wall thickness being the same. Interchangeable dies allow changeover from one diameter size to another in minimum time. The machine operates fully automatic or manually.

Core Baking Tunnel

CORES can be baked as needed in foundry pouring rooms and necessity for advanced scheduling of core-room activity is removed, by the use of the Ther-Monic electronic core baking tunnel developed by *Induction Heating Corp.*, 181 Wythe Ave., Brooklyn 11. The tunnel is a continuous conveyer type, selfcontained unit, has a capacity of 650 lb per hr, and produces a ton of baked cores at a power cost of 92¢, it is claimed. Baking cycles range from 20 sec to a few minutes, this rapid baking cycle preventing core sagging during the baking operation, it is said. Green cores may be loaded in the core-room, directly onto the tunnel conveyer, eliminating racking and much handling of green cores. The core plate emerging from the tunnel may go directly to the inspection table; there is no cooling period involved. The Ther-Monic method is claimed to make possible the adjusting and controlling of the green strength, hot strength, hardness, collapsibility, and other core characteristics. Shake-out is so complete that core residue may be removed without mechanical assistance. Ther-Monic baked cores are resistant to cracking during the pouring operation, and therefore have reduced finning to a negligible factor. The tunnel measures 16 ft 9 in. x 4 ft 4 in. x 6 ft 8 in.



Rotor Pumps

POSITIVE displacement helical rotor pumps built in two sizes and desighed for handling various grades of oils at either 50 or 75 gpm at pressures of up to 125 psi in a smooth, pulseless flow, have been introduced by *Syntron Co.*, 694 Lexington, Homer City, Pa. The pumps are said to be particularly suitable for direct drive on engines, turbines and other high speed machines, pumping liquids with reasonable lubricating properties, such as fuel, heavy crude, lubricating, and hydraulic oils. Pumps are an axial flow, positive displacement type consisting of only two moving parts; the main or power rotor and the gate or idler rotor. Timing gears are not employed. The shaft of the driving rotor is mechanically sealed with an anti-friction shaft seal. The suction port may be located in any position relative to the discharge port and the pump can be either base or flange mounted.

Drill Sharpener

PERFECT points on flat beaded drills can be ground on a machine developed for this purpose by

the *Hisey-Wolf Machine Co.*, Cincinnati 25. A holder on the left side of the machine grinds the points; a holder on the right side is used for thinning the web. The machine will handle flat drills from

½ to 2-in. diam. A point grinding attachment on the left end will also grind ordinary twist drills from ¼ to 2½-in. diam. The point and clearance angles are adjustable. Adjustment is provided to grind the webs of flat drills to desired thicknesses. Diamond dressers are furnished for both wheels.

Air Motors

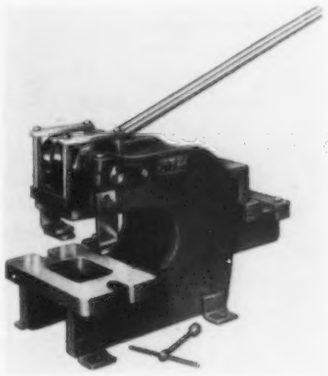
MOTORS of two sizes for starting internal combustion engines are now in production at *Ingersoll-Rand Co.*, 11 Broadway, New York 4. Known as size 9BM and size 20BM with 9 and 20 hp respectively at 90 psi air pressure, the air motor is keyed or splined to the Bendix or starting mechanism and the engine is cranked in the same manner as an automobile engine is turned over when using the electric starter. Peak horsepower is said to be attained almost immediately and a single step spur gearing is used to obtain suitable speeds.

Speed Controller

A 5-hp model variable speed drive utilizing a new principle of planetary motion applied to speed changers in combination with standard V belts and variable pitch sheaves, said to make possible infinite ratio with split-second control of speeds from 0 to 800 rpm, and into reverse, has been marketed by *Speed Selector Inc.*, 118 Noble Ct., Cleveland 13. This design eliminates gear shifts, clutches, multispeed motors, step pulleys and other complicated devices. Features are listed as cast iron sheaves on hardened and ground shafts and guide pins with sealed prelubricated ball bearings mounted in cast aluminum housings. Optional V-belt or flexible coupling input and output facilities mounting in any position.

Punch Press

BLANKING sheet metal of any type is possible with the redesigned hand punch press manufactured by *Leslie Welding Co.*, 2943 Carroll Ave., Chicago 12. The press has no ram, ways, or slides, yet is said to have the accuracy of a leader pin die set. Positive die alignment is maintained by the leaf assembly, to one end of which the punch is fastened. The other end of the leaf assembly is attached to the press frame by a flat spring serving as a pivot when punch is raised



and lowered. The load on the punch table does not have to be centered because of the rigidity of the leaf assembly and the crankshaft construction. The punch plate is 4x4$^{3}/_{8}$ in.; throat depth is 6 in.; and the stroke is 7/16 in. with adjustment of ⅛ in. Press capacity is 3-in. diam hole through 16 gage mild steel or 2-in. diam hole through 12 gage mild steel.

Soldering Iron

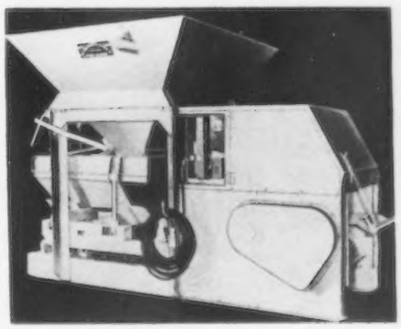
REQUIRING no electric current or external heat of any kind, a new soldering iron, known as the Quik-Shot, utilizes a chemical cartridge that heats the iron to working temperature in 5 sec, and maintains intense heat for 10 min. The cartridge, which is the size of a small flashlight battery, contains a primer and is ignited in a manner similar to that of firing a bullet. When the cartridge is placed in the copper tip of the iron and the spring rod is pulled and released at the back of the handle, the pointed rod strikes the primer and sets off the heating action, which is created by a chemical mixture of certain metal powders and an oxidizing agent. The cartridge is claimed to be non-explosive. *Kemode Mfg. Co.*, 2 W. 46th St., New York 19, is the manufacturer.

Silicone Aluminum Finish

FOR products that are subjected to excessive temperatures and exposures, a heat resistant aluminum finish called Mico has been formulated from silicone resins, by *Midland Industrial Finishes Co.*, Waukegan, Ill. It is highly resistant to heat, moisture, oxidation and ultraviolet rays, having withstood extreme temperatures up to 1000°F over protracted periods of time without surface breakdown, it is claimed. This finish air-dries or adapts itself to any force drying system. After proper reduction with special reducers, it is easy and fast to apply by spray, dip, or brush. A chemically clean surface, obtained by any conventional method, is all that is required.

Sand Conditioner

THE Preparator, a redesigned version of the B&P portable sand conditioner, is a heavy-duty sand conditioner with a capacity of 60 tons per hr. It screens, breaks lumps, magnetically separates and aerates the sand. This model, which is manufactured by *Beardsley & Piper*, 2424 N. Cicero Ave., Chicago 39, is built for operation on irregular or uncleared foundry floors. Operating mechanism is protected



from abuse and abrasives by heavy dust-tight enclosures. Lubrication is accomplished from centralized locations.

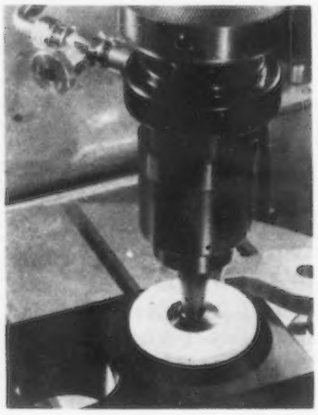
Water-Soluble Cutting Oil

FURTHER rust prevention treatment for tools, material and machinery is said to be eliminated when a new cutting oil called

Ferox is used. The cutting oil is water soluble, one part oil to 49 parts clear water for use on most metals. For use on cast iron and malleable iron the ratio is 1:33. Threading and polishing operations take one part Ferox to 35 parts clear water. The solution remains clear at all times. Ferox is sold in 5 gal cans and 55 gal drums, by *Beacon Rust Proofing Co.*, 19 W. 31st St., New York.

Jig Grinding Attachment

JIG grinding holes in hardened steel with diameters ranging from 1½ to 4 in. is possible with a new Vulcanaire attachment designed by *Vulcan Tool Co.*, 730 Lorain Ave., Dayton 10. The attachment is air driven and converts jig borers and other machine tools into precision jig grinders. The unit is



equipped with interchangeable special adapters to fit into the chuck of any machine tool. Standard and interchangeable accessories consist of a portable stand on which is mounted an air cleaner, regulator, gage and oiler, and a complete dust collecting system.

Bucket Elevator

A 10x6-in. vertical centrifugal discharge type, spaced bucket elevator, equipped with welded steel buckets spaced on 16-in. centers on a rubber elevator belt has been developed by *Bosworth Mfg. Co.*, 6723 Denison Ave., Cleveland 2. The unit, trade named L-Vator, can be furnished, by the addition of intermediate sections, to operate at a height of 45 ft. Its capacity for the handling of average material such as minus 1½-in. nut and slack stoker coal, weighing 50 lb per cu ft, or any free flowing dry bulk material not over 1½-in. lump size, is 25 ton per hr. The L-Vator is electrically powered.

Mobile Crane

A 7-TON, mobile crane that lifts its rated capacity without the use of outriggers and counter weights and carries the load safely, either on smooth surfaces or across rough terrain, has been announced

by *R. G. LeTourneau, Inc.*, Longview, Tex. It is electrically operated and push-button controlled by one man. The group structure, which controls the angular adjustment of the elevator track, gives a broad angle of deflection, making the elevator track adjustable to any angle from a horizontal position to 14° forward of vertical. There is a three-way positive electric control for pin-point spotting, lifting, and placing the load. Three Tournatorque electric motors supply a steady flow of power to the Tournacrane. Automatic slip-proof brakes on each motor provide positive braking at any height or reach, and with any lift. The maximum lift is 29 ft 6 in. and maximum reach behind the center line of the crane wheels is 31 ft.

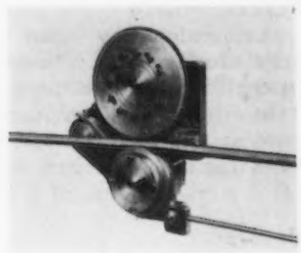
Dump Truck

HEAVY loads of scrap, castings and other industrial materials are hauled and dumped efficiently with the improved Skid Dump available from *Phillips Mine & Mill*

Supply Co., 2227 Jane St., Pittsburgh 3. This dumping unit is easily handled with either platform or fork lift trucks. Capacity is 24.1 cu ft. With a 6-in. surcharge, capacity is 30.25 cu ft. The hopper is fabricated of 3/16-in. steel plate, with smooth rolled edges. Strength and durability are supplied by formed channel legs and heavy duty welded under carriage.

Production Marker

MARKING at production speed on steel, lead, plastic rod and other products is claimed to be accomplished with the No. 14 marking machine released by *Acromark Co.*, 341 Morrell St., Elizabeth 4, N. J. This free-rolling unit continuously marks from a friction contact engraved roll and features a ball bearing roll and grooved pulley combination unit adjustable for marking a variety of rod and tube sizes. The marking roll carries engraved steel segment dies positioned by a face plate with a flange that fits into channels of segment dies. Screw holes are elongated to permit changing of segment dies by loosen-



ing screws and turning face plate slightly. This marking roll is mounted on an angle type of base which can be bolted to a bench or stand.

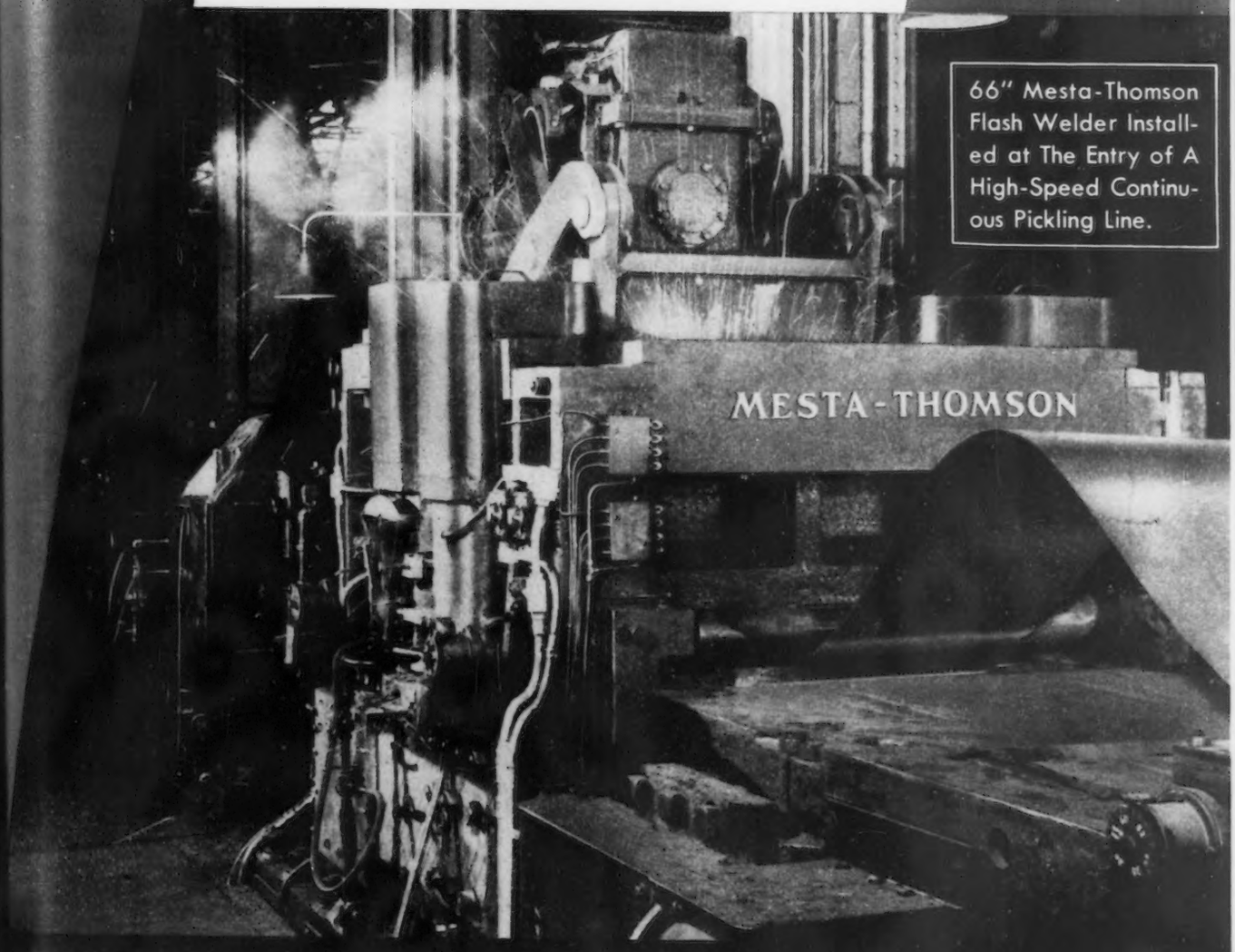
Carbide Tipped Drills

CARBIDE tipped twist drills with taper shanks have been added to the standard line manufactured by *Super Tool Co.*, 21650 Hoover Rd., Detroit 13. Sizes range from ⅛ to 1 in.

Motor Mount

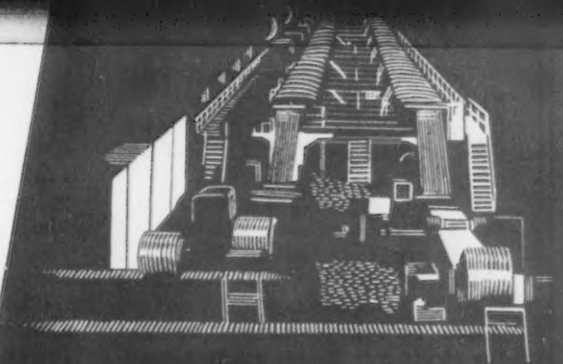
A MOTOR mount of one piece construction, requiring no bolts, nuts, straps or special tools for installation has been announced by *Lord Mfg. Co.*, Erie, Pa. The mounting is slipped into place on the assembly line, and easily removed when the motor requires servicing. The mount which fits NEMA standard bases, is said to combine a high degree of isolation of torsional vibration, with necessary vertical and horizontal stiffness to give stability to the entire assembly.

Increase Cold Mill Production with MESTA-THOMSON Flash Welders



66" Mesta-Thomson Flash Welder Installed at The Entry of A High-Speed Continuous Pickling Line.

Cold mill production is increased . . . when MESTA-THOMSON FLASH WELDERS are installed in your continuous pickling lines. They provide heavier coils, with butt-welded joints, suitable for cold rolling on today's high speed mills.



DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

MESTA MACHINE COMPANY • PITTSBURGH, PA

Assembly Line . . .

WALTER G. PATTON

• Tucker invades Detroit with his rear engine car . . . Ward sees output of 5,275,000 in '48 . . . New Draft law may upset steel distribution picture . . . Great Lakes entertains 20,000 . . . UAW-CIO opens its first broadcasting station.

DETROIT—The Tucker car will run backwards—at a speed close to 50 mph!

This was Tucker's way of scotching reports heard here for months that the Tucker would not run backwards.

In demonstrations held for the press here this week, Tucker had two cars and a transmission mounted on another chassis.

In addition to its unique body design, the new Tucker has a transmission that is unlike any of the present units. Combining the characteristics of the torque converter and other types of transmission, the Tucker unit is said to provide continuous, variable speed through the use of fluid couplings and a planetary gear train.

Tucker claims the transmission has been offered to at least one large automotive manufacturer but declined to reveal the name of the company.

According to Tucker engineers, the new transmission has only 28 basic working parts. The dash control of the new unit has three positions—forward, neutral and reverse. No low position is provided for emergency power since, according to Tucker, ample torque is provided at all times by the 166 hp engine.

The new automatic transmission is located behind the engine in the rear of the car. This will be special equipment on the new car. Tucker is also offering as standard equipment a preselector electric type transmission with four speeds forward and one reverse.

At the Detroit showing, Tucker disclosed that deliveries of tools and dies have been slow and that the company has already spent more than $6 million for permanent tooling.

Tucker disclosed that the Chicago plant has produced 20 automobiles and is now turning out two cars a day. By Sept. 15 the company expects to be turning out 100 cars a day, Tucker said.

Tucker contends that the new flat opposed six-cylinder engine in its new car will be more efficient than the new Kettering high impression engine. The compression ratio of the power plant is 7 to 1 and an economy as high as 18 miles per gal at 95 mph has been claimed.

It was revealed at the Detroit showing that several of the novel engineering features originally announced have been abandoned by Tucker. The disc type brakes have been given up as well as the 24 volt ignition system and torque converter drive at the wheels. It was stated that fuel injection would be optional rather than standard equipment. Rubber spring suspension will be used.

The cylinder head of the power plant will be made of aluminum, it was revealed. Some parts for the engine are being made in Chicago and shipped to Syracuse where the engine is being assembled.

Tucker said the company has available a little over $21 million to finance its entire program. He insisted that the present SEC investigation will not interfere with the company's organizing program.

The price of the Tucker, in common with other cars, is climbing. In Detroit it was disclosed this week that the Tucker which was originally intended to sell for $1850 is now nearer $2300.

* * *

PRELIMINARY estimates made by Ward's Reports show that the probable output for June will be 317,624 passenger cars and 117,466 trucks, or an aggregate of 435,090. With the Canadian totals added, June production looked like more than 460,000, bringing the estimated 6 months total to 2,636,904.

Thus even if the second half only equals the first 6 months, the industry could count 5,275,000 complete units produced plus a tremendous volume of replacement parts. Any way you looked at it, with the exception of rising labor costs and threats of allocation of materials, the auto industry was having a good year.

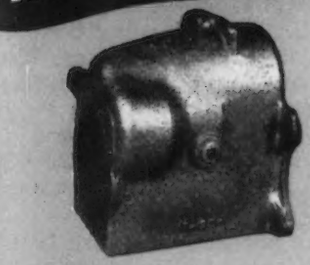
At the moment two clouds on the horizon could knock a big chunk out of today's pleasant prospects. One forboding cloud was the Ford labor impasse. The other factor was passage of the Draft Act, giving the government broad powers over steel distribution. Either or both of these could blossom into situations that would surely knock the props out from under the most carefully laid plans the industry has according to informed observers.

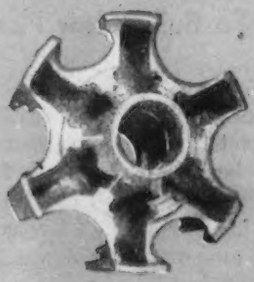
In an unanticipated move recently Ford proposed an 11¢ hourly increase for workers earning less than $1.50 per hr and a 14¢ boost for workers getting $1.50 or more. Union negotiators are insisting on a uniform increase for more than 100,000 hourly paid workers. Estimated value of the union's present demands is 28¢ or about double the best offer the company made.

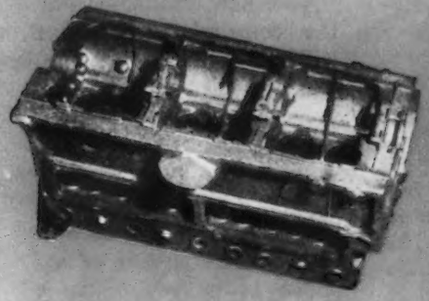
Having recently invested heavily in its new model cars, Ford is naturally anxious to maintain continuous production. The loss of 6 weeks production during the recent model changeover is bound to be felt in Ford's financial results for 1948. A prolonged stoppage because of a strike would make this year's re-

Most AUTOMOTIVE MANUFACTURERS *Wheelabrate for*

LOWER UNIT COSTS • FASTER PRODUCTION • MORE PERFECT CLEANING







In the highly competitive automotive industry — where high volume production necessitates fast cleaning . . . where unit costs are watched with closest scrutiny — you will find Airless Wheelabrator Blast Cleaning equipment the choice by a wide margin.

Acceptance like this doesn't happen by chance . . . it is the reflection of outstanding performance, because equipment like this is bought on the basis of comparative tests for faster production . . . better cleaning quality . . . lower production costs . . . economy of operation and maintenance . . . faster return of the investment.

Examples of how the Wheelabrator has attained its position of leadership are shown below. Let us show you how similar results can be obtained for you.

Half Hour Cleaning Time Cut to 5 Minutes

Prior to the installation of a 48" x 42" Wheelabrator Tumblast (17½ cu. ft. capacity) the Unit Drop Forge, Div. of Fuller Mfg. Company, Milwaukee, Wisconsin, used a combination of tumbling and pickling, both of which took about two hours to clean 2,000 connecting rods. The Wheelabrator now cleans 500 in five minutes' time, and is currently cleaning 3,000 per hour.

180 Cylinder Blocks Cleaned Hourly

The American Foundry Co., Indianapolis, Ind., uses a Wheelabrator Cabinet, with three Wheelabrator units, for cleaning 180 cylinder blocks hourly. With their former tumbling and airblast cleaning method, forty-five laborers were required for all cleaning operations. A labor force of only 31 men is now utilized in the cleaning room.

2½ Hour Cleaning Job Now Done in 20 Minutes

John Deere Tractor Co., Waterloo, Iowa, uses a 48" x 42" Wheelabrator Tumblast for cleaning various types of heat treated forgings such as gear blanks, piston rods, etc. Cleaning time averages 10 and 20 minutes per load. The former cleaning method consisted of tumbling them for an hour and a half and then recleaning them on an airblast table for another hour.

Production Increased 8 Times

A No. 1 Wheelabrator Multi-Table installed at Mechanics Universal Joint Co., Rockford, Ill., is doing a splendid job of cleaning bearing caps and spiders. The work now cleaned by Wheelabrating in one hour formerly took 8 hours to do in a Suction Blast Cabinet.

Write for your free copy of "Cleaning Problems Solved for the Automotive Industry". Ask for Bulletin No. 334.

American

WHEELABRATOR & EQUIPMENT CORP.

(FORMERLY AMERICAN FOUNDRY EQUIPMENT CO.)

510 S. Byrkit St., Mishawaka 3, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

sults most disappointing to Ford management.

TO some observers here, Ford's financial fortunes for this year are pretty much at the mercy of the union negotiators. In the past the union representatives have shown little indication of "playing ball" with management which is in an unfavorable position to resist their demands. As many labor representatives apparently see the picture, this is "their inning" so far as Ford is concerned. The more radical elements in the union are apparently prepared to make the most of their strong bargaining position with the Dearborn manufacturer.

In addition to the possibility of a strike at Ford, steel buyers here are greatly concerned over the new powers over business which are incorporated in the draft act passed during the final hours of the 80th Congress.

Executives here are viewing with alarm the right to allocate steel for defense needs in case of reconversion of industry to preparedness for war on the advice of the National Security Resources Board. While few observers see an immediate danger of this, the grave reports coming from Berlin these days have served as a warning notice to executives reluctant to believe that the U. S. is going to become deeply involved in the European situation.

* * *

Actual production of the new Kettering high compression engine will not begin until 1949, Kettering disclosed recently. The former GM research chief said the new engines cost very little more than the present power plants. Where the optimum compression ratio is used, Kettering predicted a 40 to 50 pct saving in fuel will be realized. However, he believes that it may be as much as 10 years before fuels are available to develop the new engines to their maximum efficiency.

Kettering believes that cars 5 years from now will not be much different from the present-day models. He believes the public taste has been somewhat standardized on the 30 million cars now in service. Most of the changes made will be in the direction of improved economy and increased riding comfort, he predicted. Boss Ket, like most automotive engineers, believes that automatic transmissions on all lines of cars will soon be available.

* * *

IF Karl M. Greiner, recently appointed vice-president and sales manager of Packard, has his way, the automobile salesman of the future is going to be very different from the auto salesman of the past. At a recent gathering of Packard regional and zone officials and factory executives, Mr. Greiner prdeicted that auto salesmen of the future will be much better trained in salesmanship and, as a result, will have greater earnings opportunities than prewar.

"Our newly-inaugurated retail manpower program embodies the suggestion that a salesman be paid a definite salary, sufficient to cover his minimum expenses. He should also be paid a commission—a clear-cut amount on each sale," Mr. Greiner added. Mr. Greiner also believes that auto salesmen should have vacation-with-pay consideration as well as all the advantages enjoyed by other members of the dealers' organization.

* * *

EACH of the 20,000 visitors at Great Lakes open house last week were presented with a booklet "Men and Mills of Great Lakes Steel," especially prepared for the occasion. In addition to a factual historical account of the development of the Great Lakes mill on a 35-acre Ecorse swamp, the booklet emphasizes the fact that it is *men and* materials that make steel. All through the book the importance of manpower and the necessity for cooperation between workers and management is emphasized. The booklet is profusely illustrated with colored photographs of unusually high quality.

The book traces in non-technical terms the history of the plant and its development, discussing such things as quality control, raw materials, hot metal, steelmaking processes, functions of the soaking pit and the various rolling processes.

The novel appeal to the individual is well illustrated by the closing paragraphs of the book:

"Steel is made by men. The human mind designed and created these facilities and processes. The huge furnaces, the massive mills are tools used deftly and surely in the hands of good steel men. Much of the hard labor has been taken out of steel—but skill is more necessary than ever before. Steel of uniformly high quality can be made day by day only by an organization which has these things—plus a spirit of friendly teamwork."

* * *

GROUND was broken in Detroit last week for the first UAW-CIO radio station WAIW-FM. The new station is rated at 52,000 watts and will have a broadcasting tower 300 ft high. The station will be owned and operated by the UAW Broadcasting Corp. Officers of the corporation are Walter P. Reuther, president; Emil Mazey, secretary-treasurer; John W. Livingston, Richard Gosser and Norman Mathews, vice-presidents. Mr. Mathews is director of the union's radio committee.

The new station, which is to be completed in 90 days, will serve the southeastern Michigan district, including Detroit, Flint, Pontiac, Monroe and Ann Arbor.

Lincoln Electric Co. To Build New Plant

Cleveland

• • • **Plans for the** construction of a complete new manufacturing plant and headquarters offices for Lincoln Electric Co. at East 178th St. and St. Clair Ave., Cleveland, have been announced by James F. Lincoln, president.

Preliminary studies for the new plant, which will represent an investment of more than $10 million, are being developed by engineers of the Austin Co. It will be situated on a 50-acre tract and will ultimately provide about 25 acres of floor space under one roof.

The new facilities will replace the company's present plant, which will be disposed of, in the light of traffic problems presented by establishment of the new Lake Shore freeway alongside the plant.

The project was announced following a conference with Mayor Thomas A. Burke, Cleveland, concerning construction of a $300,000 storm sewer which the city has agreed to install to serve the new plant.

HERE'S HOW...

LINDBERG INDUCTION HEATING

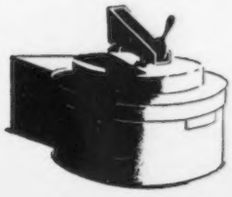
increases hardening production 77% . . . reduces heating cost 55%

Woodstock Typewriter Company, manufacturers of the nationally popular Woodstock Typewriter, use this Lindberg 5 KW Electronic Induction Heating Unit to harden ends of sub levers. Levers are placed on a "dial fixture" as shown—pass through inductor block—and are automatically ejected into water quench. Hardness is required to a point 11/16" from end of lever—but no farther! This is important as levers are later formed, and breakage would result if hardness extended into formed area. With Lindberg Induction Heating, hardened area limit is easily held to .040". Former method which employed belt that conveyed parts under a series of flames resulted in variations of as much as ½".

Check this "Before and After" story of increased production, reduced fuel cost and precisely controlled limit of hardened area.

	BEFORE	AFTER
Levers hardened per hour	900	1600
Heating cost per 1000 levers	25c	11c
Limit of area of hardness controlled to within—	.5"	.040"

Write for Bulletin 1410 "Lindberg Electronic Induction Heating." Electronics Division, Lindberg Engineering Company, 2458 W. Hubbard Street, Chicago 12, Illinois.

LINDBERG  FURNACES

• Lack of agreement on trade-in values blocks construction of new ore boats . . . Ore shortage forecast . . . Steel needs for synthetic fuel put off until next year.

WASHINGTON — Construction of new ore boats, or at least a start on replacing the rapidly aging Lake fleet, during the fiscal year just begun will depend largely on whether the owners of the 300-odd ore boats and the Maritime Commission can get together on reasonable trade-in values.

The Maritime Commission appropriation for the fiscal year 1949 carries $89 million for new construction. Congress also extended until Sept. 30 the time in which the Commission can expend the full $84 million allowed for new construction in fiscal 1948.

Maritime officials told THE IRON AGE, however, that despite the increase in construction funds, demands on these funds far exceed the amount made available by Congress. In addition to the need for new ore boats, passenger carriers and tankers also present difficult problems.

Admiral Smith, Maritime Commission chairman, told Congress that ore boat operators want "an exchange value of $140 per ton for the ships they turn back." While trade-ins are authorized by the Merchant Marine Act of 1936, Admiral Smith points out that for ships 40 to 50 years old a good exchange "would be the scrap value, perhaps $50,000 a ship. On a percentage basis about 10 pct." He estimated the cost for new carriers to be about $227 a ton. On this basis, it is obvious that the Commission is not going to allow a $140 ton trade-in value.

Apparently, Congress agreed with the Commission position, for in the appropriations report no special funds were provided for ore boat trade-ins, despite pressure for such action from many sources. Instead the report suggested that the Commission consider proposals for trade-ins within the limits of the $89 million made available. Whether such use is to be made of any of this money depends on the ability of the Commission and the operators to work out a mutually satisfactory trade-in valuation.

THAT the need for replacement of the ore boat fleet is urgent is confirmed in several quarters. In the executive branch, Col. J. Monroe Johnson, Director of the Office of Defense Transportation, states that "the present program submitted by the steel manufacturers on the movement of iron ore from the upper lake iron range for the calendar year 1948 amounts to 86 million tons.

This compares with a program last year of approximately 78 million tons and is only 6 million tons less than the greatest ever achieved during which time we had 30 more boats in the ore service than we have at the present time. Our estimates are that by the very closest scheduling and maximum utilization of all the transportation facilities available, we cannot bring down more than 81 million tons and that task will require close policing."

In Congress, Rep. Alvin Weichel, R., Ohio, chairman of the House Merchant Committee and long-time advocate of replacing the ore boat fleet, makes reference to the fact that even extension of the law permitting Canadian boats to carry ore will not be adequate to meet all requirements for ore. He submitted to the Appropriations Committee the following tabulation showing the age of the 312 ore carriers: 0 to 10 years, 25; 11 to 20 years, 5; 21 to 30 years, 35; 31 to 40 years, 93; 41 to 50 years, 143; and 51 to 53 years, 11. Rep. Weichel emphasized that more than 10 new ore boats a year can be built, and that at this rate it will take at least 25 years to replace the existing fleet.

* * *

CONGRESSIONAL failure to enact legislation authorizing the construction of the first commercial-size synthetic petroleum plants will relieve the steel industry of a small headache in the form of additional steel requirements at least until the next session of Congress. While there has been no particular opposition to the legislation approved by the House Interstate and Foreign Commerce Committee calling for RFC loans to industry or actual government construction of plants with a daily aggregate capacity of 30,000 barrels, which is deemed a sufficient base for development of an adequate synthetic fuels industry, there was not sufficient time to pass the measure, particularly since the Senate had not even begun to study it.

The measure has the approval of the Dept. of Interior, Dept. of State, National Security Resources Board, Federal Power Commission, and the RFC. It is expected that such a proposal will be approved by the 81st Congress which convenes next January.

REFLECTING the military interest in this program is the announcement by the Corps of Engineers that a contract in the amount of $110,000 has been let to an engineering firm at the request of the Dept. of Interior to procure the basic data necessary for the planning of synthetic fuel manufacturing plants.

This initial contract covers a sample survey of portions of three states and is for the purpose of determining general areas suited for the manufacture of synthetic fuels. The three sample regions to be surveyed are western Kentucky, northwestern Colorado, and south-

$300 SAVED IN "PIN" MONEY

Sun Lubricant Reduces Toggle Pin Wear 70% and Minimizes Shutdowns in Die-Casting Plant

In injection-molding zinc die castings, a manufacturer was experiencing excessive wear and breakage in toggle pins. The lubricant in use, which was applied to the pins by gun, just couldn't stand up under heavy-duty operation.

Asked for his advice, a Sun engineer recommended a grease which had been "Job Proved" in many machines of the same type. Over a period of 14 months, use of this Sun grease resulted in 70 percent reduction in breakage of pins. Translated into hard cash, this represented a $300 saving. In addition, costly shutdowns for pin replacement were greatly reduced.

Records like this are not unusual in plants where Sun "Job Proved" greases and oils are used. You can rely on these lubricants to help keep equipment operating steadily and safely, with minimum time-out for maintenance. For the booklet "What Makes a Good Grease," write Dept. IA-7.

SUN OIL COMPANY • *Philadelphia 3, Pa.*

In Canada: Sun Oil Company, Ltd.
Toronto and Montreal

SUN PETROLEUM PRODUCTS SUNOCO

"JOB PROVED" IN INDUSTRY

east Texas. Subject to the availability of funds the Army plans to follow the initial contract, which will be completed within 4 to 6 months, with a survey, nationwide in scope, which will cover the remaining area of the continental United States where the basic raw materials, coal, oil, shale, and natural gas, are known to exist.

The estimated steel requirements for the 30,000-barrel industry range between 121,000 and 174,000 tons assuming that one plant would be built for each of the three presently known processes of converting coal and oil shale into liquid fuels.

Broken down, the requirements are as follows:

	Tons
1 plant using coal synthesis (Fischer-Tropsch process)	46,000-50,000
1 plant using hydrogenation from coal	60,000-67,000
1 plant using oil shale	15,000-57,000
Total	121,000-174,000

THIS tonnage is largely made up of plates, structurals, and castings. The differences in the requirements for the oil shale plant depend largely on whether such a plant will include a refinery or whether existing refineries will be needed.

These amounts represent only about 3 pct of the total amount of steel consumed by the petroleum industry in 1947, but it is apparent that the steel industry will be in a better position to meet them a year from now than at the present time, barring heavy defense requirements.

The ultimate goal of the Interior Dept. is a $9 billion synthetic petroleum industry with a capacity of 2 million barrels a day. An industry of this size should be built over a period of 5 to 10 years, depending on the military need for haste, according to Interior Secretary Krug. An industry of this size would require an estimated 16.5 million tons of steel products.

Voluntary Allocation of AEC Steel Agreed Upon

Washington

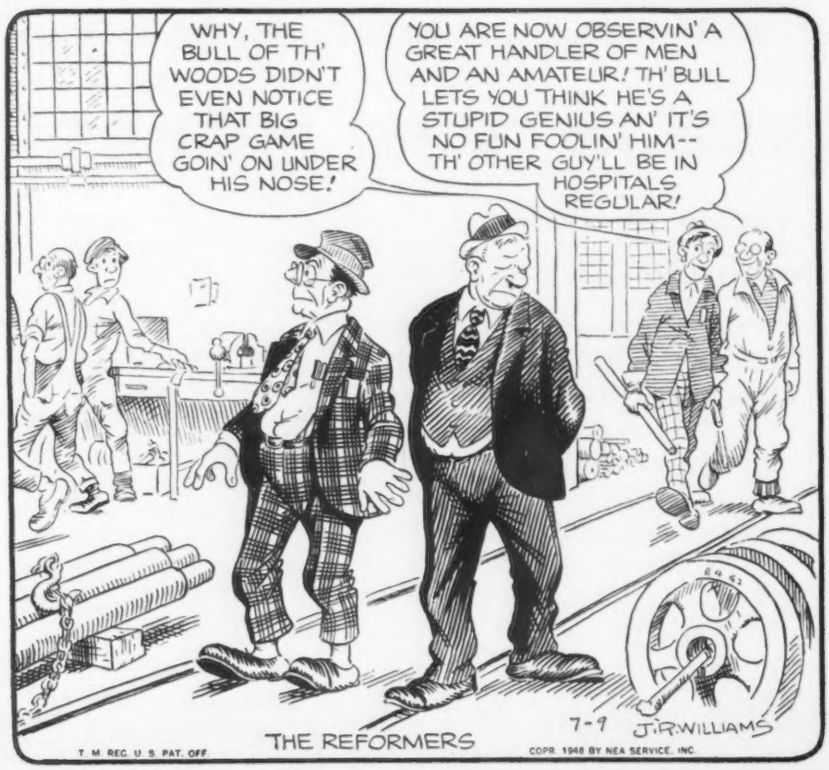
• • • **Way was cleared** last week for placing into effect the voluntary allocation agreements which allow approximately 160,000 tons of steel products for Atomic Energy Commission construction projects.

Requests for compliance were mailed to 30 steel manufacturers, the acceptance of which automatically provides immunity under the anti-trust laws and the Federal Trade Commission Act.

Under the AEC allocations, tentative plans call for 64,291 tons during the third quarter 1948, 70,790 during the final quarter, and 24,800 tons during the first two months of 1948. The 1948 third quarter will be well underway before the program gets started.

Steel plates make up the bulk of the AEC requirements with about 67.5 thousand tons needed. Other classifications of required products include reinforcing bars, structural shapes, galvanized sheet, rails, pipe and tubing.

THE BULL OF THE WOODS — BY J. R. WILLIAMS



Add Steel Making Capacity

Washington

• • • **McLouth Steel** Corp. of Detroit has purchased war surplus steel-making facilities located in East Chicago for a sales price of approximately $1.2 million, slightly less than two-thirds the original cost.

Although the plant is subject to the national security clause, permission has been granted McLouth to move the plant from East Chicago to Detroit where the purchaser makes automotive parts.

Operated by Youngstown Sheet & Tube Co. during the war, the plant had a rated capacity of 120,000 tons of alloy steel with two electric furnaces. It is designed to produce tungsten carbide, stainless, high carbon and open hearth steels.

Appointed to ECA Staff

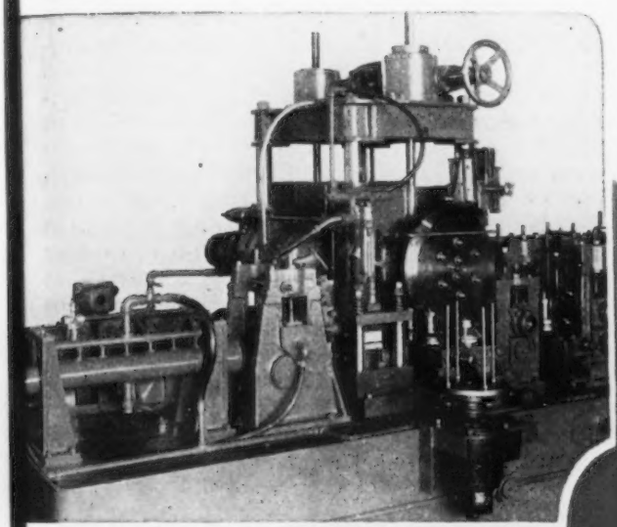
Washington

• • •**Dr. Calvin B. Hoover** of Duke University has been appointed to the ECA staff in Paris under Special Representative W. Averell Harriman and will head the program review division there. Dr. Hoover has previously served on the White House foreign aid committee.

McKAY

RESISTANCE WELD TUBE MILLS

McKay Electric Resistance Weld Tube Mills can be put to work quickly and easily in your plant, producing high quality tubing.



The heart of a tube mill is the welding unit. The combination of modern rotary transformer (patented) correctly mounted with proper voltage regulators permitting perfect matching of speed and heat while running, is the last word in efficient, accurate control of this all important unit. Welding electrodes accessible for changing without disturbing transformer, leads or bearings.

This has been accomplished by:

1. Simplifying and centralizing all necessary controls.
2. Complete protection through approved safety devices and interlocks.
3. Supplying motor drives and push button controls to essential heavy duty motions.
4. Eliminating necessity of welding from coil to coil — strip from coil threads itself through machine, without manual assistance.
5. Automatic Rotary Head Cut-off (patent pending) producing lathe cut and accurately maintaining desired lengths.
6. Providing simple, easy means of changing rolls for other tube sizes.

achine illustrated above is a complete tube ill, capable of producing sizes from ½" O.D. 3" O.D., from 20 to 11 gauge. We build a mplete range of sizes to handle requirents from ½" dia., 20 gauge, to 10" dia., " wall. We also build a complete line of tube nd bar drawbenches. We solicit your quiries.

The **McKAY MACHINE** *Company*

ENGINEERS AND MANUFACTURERS OF SHEET, TIN, AND STRIP MILL EQUIPMENT

YOUNGSTOWN, OHIO

ASSOCIATED COMPANY

The WEAN ENGINEERING CO., Inc. • WARREN, OHIO

• California mills will be producing close to a million tons of steel sheets by end of 1950 . . . Need for training of skilled workers in industry revealed in Los Angeles survey.

SAN FRANCISCO — Whatever else western economy may lack for complete integration in 1950, steel sheets will probably be so abundant as to make it necessary for salesmen at least occasionally to leave their comfortable office chairs and do a bit of selling.

A recent announcement by Kaiser Co., Inc., Iron and Steel Div., that within 2 years they expect to have facilities producing hot-rolled steel sheets up to 58-in. wide and with a minimum 14 gage at the rate of 100,000 tons per year, means that California alone will be producing between 800,000 and 1 million tons of hot and cold-rolled sheets in 1950.

Geneva Steel Co. in Utah is expecting to be turning out hot-rolled coils at the rate of approximately 400,000 tons per year within 7 or 8 months and Columbia Steel Co.'s cold-rolling facilities at Pittsburg, Calif., will be turning out between 350,000 and 400,000 tons per year of cold-finished steel with a maximum width of 54-in. and down to tinplate gages within a few months. On top of this, Columbia has on order machinery for a slightly smaller cold-rolling mill at Torrance, Calif., and if the Justice Dept. acts within a reasonable time to give approval to the sale of the WAA aluminum plant there to Columbia, these mills should be producing within 18 months to 2 years.

Decision to channel some of the 840,000-ton annual ingot production of Fontana's furnaces into coils and flat sheets was made only after extensive studies convinced the merchandising department of the Kaiser Co. that it would be possible for that organization to take a good share of the western market.

If it is eventually necessary for steel mills to price their products on an f.o.b. basis, which it is generally conceded would favor those steel plants near consuming areas, it would appear that the Kaiser venture would have an even better chance of success because of the rapidly increasing market for all steel products in the southern part of California.

There seems to be little doubt in the minds of most business men familiar with the steel market, but that the new Yoder electric weld pipe plant scheduled for completion in about 2 years to produce 100,000 tons of pipe annually from 5 to 14 in. in diam, will be successful. Present demand for such products, of course, far exceed the supply, and it is the consensus of observers that even 2 years from now there will be a lush market for this pipe, not only in the oil fields, but for use in the conveyance of gas and water. There is little indication of abatement in the high rate of both home and business construction which has placed a strain on utilities to supply conduits for these necessities.

THE Fretz-Moon continuous welded pipe machine producing pipe in diameters of from ½ to 4 in. is working at capacity and, even so, its products are booked solid through the third quarter which is as far ahead as orders have been accepted.

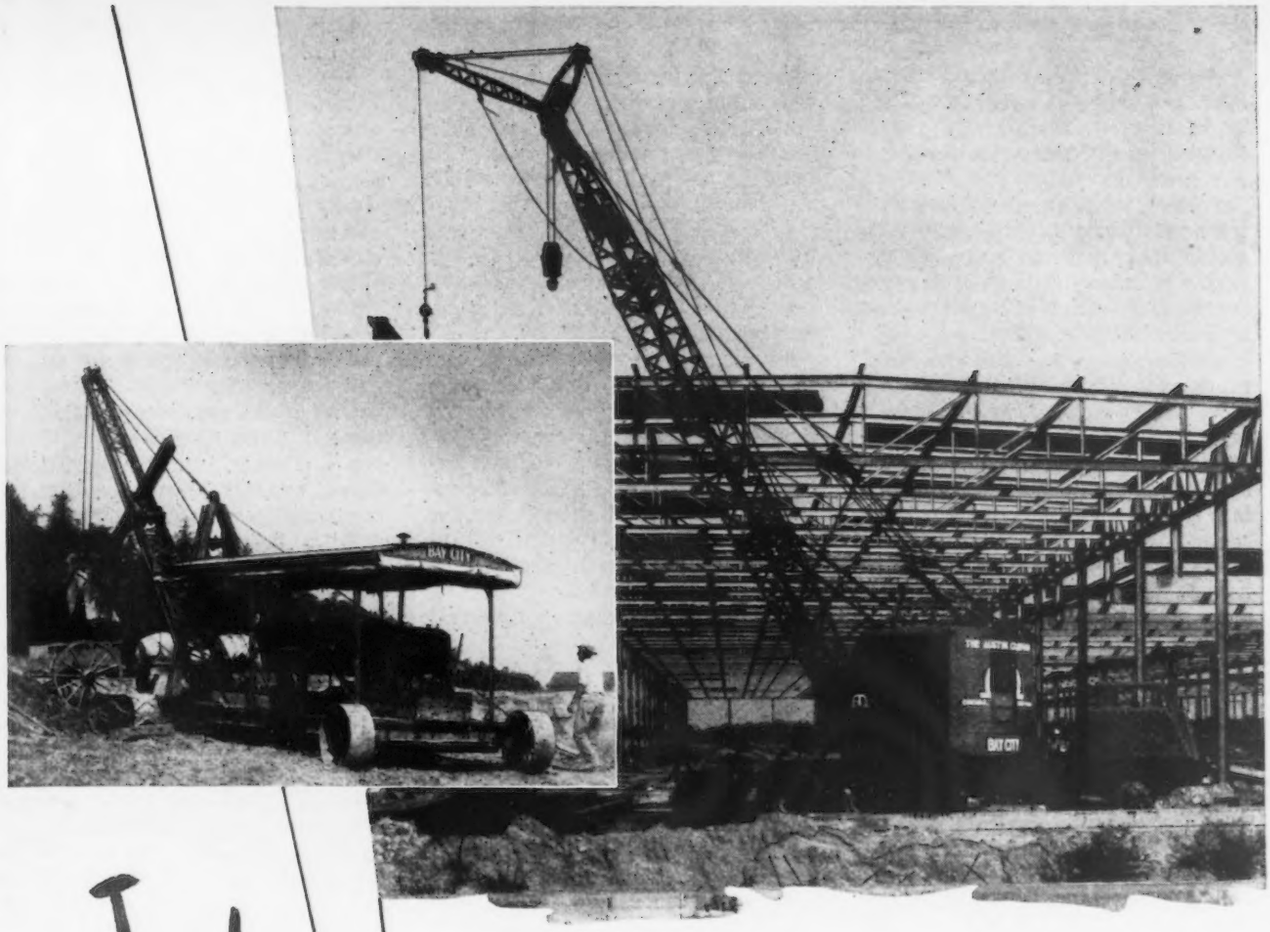
The seventh open-hearth furnace which was approved by the RFC several months ago and which will add approximately 140,000 tons a year to Fontana's ingot production is expected to be in operation by the end of this year.

Some close observers of the steel situation in the West are trying to calculate the effects of increased ingot production throughout this area on the scrap situation. While the West in the prewar years was considered a scrap rich area it appears to many that with the expansions now under way or recently made by Bethlehem, Pacific States Steel Corp. and now Kaiser, those days are gone forever. While the scrap situation has eased somewhat recently largely because of the shipbreaking activity, which has been netting from 40,000 to 50,000 tons per month on the Coast and which is expected to dwindle to practically nothing in 6 or 8 months, there is little hope for long range supply. If there is a tightening in the scrap situation the 1200-ton capacity blast furnace of the Kaiser Co. at Fontana will be a decided economic advantage. Incidentally, this stack has been in operation for almost 6 years without relining and operators are keeping a sharp lookout for hot spots or other signs of failure. Thus far all is reported in good order.

LOS ANGELES—Deploring the fact that there is a serious scarcity of workers being trained for industry, a recent report published by the Industrial Mobilization Committee of the Chamber of Commerce, points out that at the present time only 12 pct of the skilled workers whom the metals trade industry would need in any emergency production program are now in training.

The survey was made to determine the number of all around and partly skilled workers employed in various crafts, the number needed at full operation, the number in training and average training time required. The metals trade industry was taken as typical of all others, and it was found that 100 pct more skilled people would be needed at capacity operations than are now employed.

Pointing out that full production would be practically impossible under any estimated 60-day mobilization period because none of the full skills in the metal trade, and only



Judge Twin Disc by the Companies it keeps

(Left) This one-man excavator, built around 1923, is similar to the first Bay City machine equipped with a Twin Disc Clutch. Bay City Shovels, Inc., since has used Twin Disc Clutches exclusively on excavating and material-handling equipment.

(Right) Bay City's current Model 180-T66 CraneMobile, Twin-Disc equipped, works for the Austin Company on a plant construction job near Kalamazoo, Mich.

Bay City Shovels, Inc., uses Twin Disc Clutches exclusively on its excavating and material-handling equipment.

Bay City used its first Twin Disc Clutch in 1923.

97 leading manufacturers of material-handling and earth-moving equipment find Twin Disc Friction Clutches and Hydraulic Drives efficient units for power transmission. You can judge Twin Disc by the companies it keeps. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois.)

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES
REG. U. S. PAT. OFF.

SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

seven of 19 partially skilled, can be mastered under one year, the study urges that the training be organized on an industrywide level immediately.

Because of the expanding industrial production in this area, it is stated that there is ample opportunity to absorb more skilled workers in normal activities here than in many other locations.

Compressed Gas Cylinders, Inc., reportedly the West's newest and most modern plant for production of ICC specification cylinders, opened here recently. Capacity production of 20,000 units per month is expected to supply western and export markets.

The company's first products will include a 100 lb capacity propane gas cylinder manufactured from 3/16-in. plate in the form of two cold-drawn cupped halves joined by one center circumferential submerged arc weld. The finished cylinder measures 14½ in diam and 44½ in. long and is fully tested to meet all specifications required by ICC, according to company spokesmen. Although the cylinders have a working rating of 240 psi, each one is hydrostatically tested to 480 psi. Two of the principal safety features are the placing of the threaded boss from the inside with an inside pressure flange, and submerged arc weld on the outside for maximum strength.

Acetylene cylinders in all sizes are also to be manufactured. This cylinder will be a cold-drawn shell with an improved monolithic filler which is said to provide faster gas filling with a lower tare weight. It will also have the boss inserted from within, and a curled rolling surface.

Specially designed fixtures are features of the production line, including a hydraulically operated marking machine for placing precision cut markings. Welding fixtures with hydraulic positioners increase accuracy of submerged arc welding.

Operations at the new plant are now on a two-shift basis. R. G. Smith is vice-president and general manager.

AMERICAN sportsmen, who spend about $8 million annually in construction of racing cars, are expected to order nearly $6 million worth of racers from Los Angeles manufacturers. With completion of the recent Indianapolis race, the new production season is under way, and racing car builders report the biggest backlog in their history.

Among the chief engineering developments in the new cars now under construction will be use of flexible rubber gas tanks. These were used on aircraft during the war because they were light, self-sealing and strong, and greatly lessened the danger of fires in a serious crack-up. Other wartime ideas expected to be incorporated in this year's models are aircraft-developed valves, fuel hoses, brakes, and cowling fasteners. A major innovation will be adoption of torsion bar suspension.

One of the graduates of the racing car building fraternity, Preston T. Tucker, president of Tucker Corp., recently announced that his organization will be building automobiles in the Los Angeles area within the next 2 years.

A strike at the Ford Motor Co., Lincoln-Mercury plant in Maywood near here was averted when the management agreed to recognize the United Auto Worker's grievance committee shortly before the hour scheduled for a walkout.

Negotiations were carried out primarily in Detroit and provide that the company management will unofficially recognize the negotiating committee until the National Labor Relations Board orders a collective bargaining election in the plant.

The union claims that approximately 678 union members approved the walkout early in June if the management refused to recognize the union for the purpose of adjusting grievances. The fact that the Ford plant is just across the street from the Chrysler plant where 1100 workers recently won a 13¢ an hour wage raise following a 17-day strike hasn't made matters easier for the Ford management.

The local Ford plant is said to be the only one operated by this company which does not have a contract with the United Auto Workers.

AIR POWER: Final inspection is being made on a group of Lockheed F-80C's, latest model of the Shooting Star for the U. S. Air Force. The F-80C will be powered by a new Allison turbo-jet engine which will give the fighter a take-off rating of 4600 lb thrust, increased speed and faster climb.

Assist On Contracts

Chicago

• • • **A directory of** federal government purchasing offices has been prepared by the Chicago Assn. of Commerce and Industry for distribution to Chicago companies interested in obtaining government contracts. The new directory is based on a recently completed survey by the association and includes the addresses of government purchasing offices.

PERSONALS

o o o

• H. **P. Saxer** has been named superintendent of the blast furnace department, Pittsburgh works, Jones & Laughlin Steel Corp., and J. R. **McCarney** has been appointed assistant to the superintendent.

• P. **F. Bauer** has been named manager of a newly-formed central region of Allis-Chalmers Mfg. Co.'s general machinery division with headquarters in Cleveland. Mr. Bauer joined the company in 1928 and served as a salesman in the Pittsburgh district office until 1942 when he was named manager of industrial sales department.

• **Heyliger Church,** vice-president in charge of sales, has been advanced to executive head of all sales divisions, foreign and domestic of the Weatherhead Co., Cleveland. **R. P. Gibson,** formerly vice-president in charge of the automotive sales division and manager of the Detroit office, has been appointed vice-president and general sales manager with his headquarters in Cleveland. **M. C. Peterson** has been appointed assistant general sales manager. Mr. Peterson recently joined the company as sales manager of the industrial sales division. **John D. Baldwin, Jr.** has been appointed chief product engineer and **Charles H. Crawley** has been named chief design engineer of Weatherhead's engineering department. Messrs. Baldwin and Crawley have been with Weatherhead since 1927.

• **D. A. Merson** and **Harry C. Wildner** have been elected vice-presdents of the National Lead Co., New York. Mr. Merson has been manager of sales and Mr. Wildner has been comptroller. Both are directors and members of the executive committee. **Henry O. Bates,** secretary, has retired and is succeeded by **John B. Henrich,** formerly assistant secretary. **Thomas F. Owens** has been appointed assistant secretary.

• **Norman P. Hitchcock** has been appointed assistant superintendent of electrical maintenance at the Brier Hill works, Youngstown Sheet & Tube Co., succeeding Louis C. Breetz who has retired. Mr. Hitchcock came to Youngstown as powerhouse repairman in the Campbell plant in 1933. He was made chief electrical inspector in 1936 and in 1940 was transferred to the Brier Hill works as general night foreman of maintenance.

J. CARL BODE, president, National Carbide Corp.

• **J. Carl Bode,** formerly operating manager, has been elected president of National Carbide Corp., New York, succeeding **L. A. Hull** who becomes chairman of the board of directors. Mr. Bode joined National Carbide in 1928. He was successively superintendent of the Keokuk carbide plant, works manager at Louisville and assistant operating manager in New York. Mr. Hull served as president of National Carbide since 1941.

• **Russell E. Cunnick** has been elected vice-president and general sales manager, Niles Rolling Mill Co., Niles, Ohio. He has been with the company since its organization in 1935 and has been general manager of sales since 1946. He was formerly associated with Thomas Steel Co. and Youngstown Sheet & Tube Co.

• **George L. Davis** has been elected president of Vulcan Soot Blower Corp., Dubois, Pa., and director of Northern Equipment Co., Erie, Pa. Mr. Davis has been vice-president of Diamond Power Specialty Corp. and general staff manager, sales, Carnegie-Illinois Steel Corp.

• **Leonard C. Barr** and **Maurice A. Enright** have been elected vice-presidents and added to the board of directors of Morton-Gregory Corp. **William J. Kane,** a member of the board and sales manager of consumer products for the corporation with offices in Toledo, has also been elected a vice-president. Mr. Barr joined Nelson Stud Welding Corp. in 1943 and was named general sales manager in 1945 when the Nelson plant was established at Lorain. Mr. Enright joined Nelson in 1942 and was named plant superintendent in 1943. He has been general works manager in Lorain since establishment of the eastern plant in 1945.

• **Dr. Philip J. Wilson Jr** has left Mellon Institute to join the research and development division of the Carnegie-Illinois Steel Corp., Pittsburgh, as research associate.

• **H. S. Mitchell** has been appointed assistant purchasing agent of the Ohmer Corp., Dayton, a subsidiary of Rockwell Mfg. Co. Mr. Mitchell succeeds **P. K. McCarren,** who has resigned.

• **Albert R. Cranks** has been appointed district manager for the eastern territory, the Sheffiield Corp., Dayton, representing Threadwell Tap & Die Co.

• **Edward M. Borger,** president, the Peoples Natural Gas Co., has been elected a director of Dravo Corp., Pittsburgh, filling a vacancy created by the retirement of **S. G. Cooper.**

• **Paul L. Dragon,** supervisor of industrial relations, Columbia Steel Co., Pittsburg, Calif., has been named assistant director of industrial relations with offices in San Francisco.

• **A. E. Kolehmainen** has been appointed supervisor of the tax division of Geneva Steel Co., Geneva, Utah.

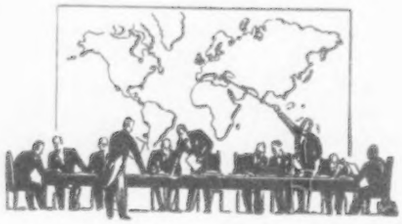
• **D. E. Lally** has been appointed assistant general sales manager, Elastic Stop Nut Corp. of America, Union, N. J. Mr. Lally joined the company in 1943 and previously was associated with Abbotts Dairies, Inc.

• **Arthur E. Currier** has joined the research department of Harbison-Walker Refractories Co., Pittsburgh.

(CONTINUED ON PAGE 143)

European Letter . .

• Western Powers said to be responsible for the failure of the policy of unity in Germany . . . Economic and political fabric of German State rent asunder.



LONDON — The bisection of Germany is for the time being complete. Politically, Germany has been cut in two ever since Potsdam, and economic partition has become more and more apparent as the policies of the Eastern and Western Powers have diverged. The only new thing that has happened is that partition has been formalized and fixed by the introduction of separate currency reforms, first in the Western zones and then in the East. With different money circulating on either side of the zonal frontier, it acquires the definition of a national boundary. The economic and indeed the political fabric of a single German State has been torn in two; for the time being at least there are two Germanies, East and West.

This is an outcome so obviously unsatisfactory and so fraught with danger for the future that, having reached this last decisive stage, some people in the West are inclined to draw back and question the whole Allied policy which, they say, has led to this consummation. Voices have been raised in America protesting against the creation of a separate state in the West and urging further delay before any more irrevocable steps are taken. French opinion appears almost unanimous in preferring the old quasi-colonial status for Germany with all pervasive Allied control and almost no organs of German government. In Britain, a group of Labor members have urged Mr. Bevin to make one more attempt to secure Four-Power agreement and to work out policies common to the whole Reich. Through all these reactions runs the underlying suggestion that the Western Powers are responsible for the failure of the policy of unity and that their precipitate action has brought into being this dangerous monster of a dual Germany. And this in turn is precisely the accusation that Soviet propaganda is dinning into the ears of the German people; if left unchallenged, it may end by leaving the Germans with the impression that Russia alone is the champion of Germany unity.

THE first point to clarify in discussing the Allies' German policy is that the division they are accused of now creating has in fact existed for nearly three years. Russian tactics since Potsdam have made the division inevitable. Within six months of the formal beginning of occupation, the Russians had suppressed the Socialists in their zone, created the totalitarian control of a single party and introduced most of the political forms of "Eastern democracy." They also pursued their own economic policy with equally little respect for their allies' wishes. After stripping their zone of a large part of its industrial equipment, they set the remainder to work on reparations from current production, expressly excluded from the Allied agreement on reparations, and took over a number of key undertakings as Soviet concerns. This process of using the Soviet zone as an annex of the Russian economy led inevitably to a Russian refusal to join the Western Allies in a single import-export policy. Two years of these economics divided the zones so completely that currency reform now merely formalizes an existing situation. During all this time, the Western Allies have waited, hoped, negotiated, protested; only when economic collapse in their own zones could be staved off no longer, did they begin to pursue independent policies.

Reprinted from The London Economist by special permission.—Ed.

The second point to be made is that the Western Powers have sought throughout to secure German unity. At any time from Potsdam to the London Conference last November the Russians could have had unity if they had been prepared to accept the Western Allies' reasonable conditions—an end to the stripping of the Soviet zone, an end to unagreed and unilateral reparations policies, the restoration of German undertakings transferred to Soviet ownership, a common import-export program; and above all, an end to the political tyranny of the Socialist Unity Party. Without these conditions, German unity and democracy would in any case have been a farce. The Western Allies can hardly be blamed for failing to achieve a unity to which Russia was prepared to pay lip service only.

IT is against this background that Allied policy in Germany must be judged. Nobody in his senses would have divided Germany for choice. Of all the frontiers between the eastern and western worlds, the frontier running through the heart of Germany is the most unstable. But, given the fact that the division of Germany was a preexisting, Soviet ordained fact, it can at least be said that the policy now being pursued by the Allies in Germany is making the best of a very bad job.

Consider the advantages of Low and High Lift Trucks

On many jobs, either Low or High Lift power trucks are better suited than fork trucks. Their lighter weight is advantageous where floor or elevator capacities are limited, and they are lower priced than comparable fork models. Low or High Lift Trucks are not as heavy because the load is *over* the wheelbase—fork trucks must be counterweighed, usually with lead.

High Lift Trucks can have forks substituted for platforms for palletization.

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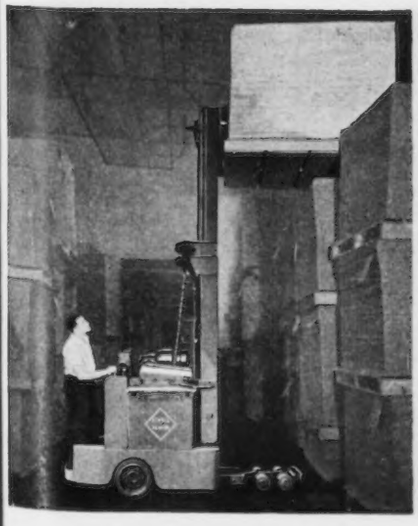


Industrial News Summary...

- **Scrap Market Prices Strong**
- **Consumers Face Shortage Later**
- **F.O.B. Mill to Hit Steel Users**

STEEL companies are well on their way this week to licking (1) the steel wage problem which will come to a head soon, (2) the steel price rise which certainly will follow the wage increase and (3) the f.o.b. mill system of selling steel which outlaws freight absorption and names the price at the point of production. But one major problem still unlicked is scrap.

It has the steel industry more worried than anything else right now. The shortage of scrap has been there, it is there now and it will be there this winter. Even with summer days when scrap is supposed to be moving fast this week supplies are dwindling, demand is high and the strait-jacket put on prices is cracking open at the seams.

Heavy melting scrap prices are up this week for the first time in months in a major market. The breakthrough happened in the Chicago district where heavy melting steel is up an average of 75¢ a ton. This increase has moved THE IRON AGE steel scrap composite up 25¢ a gross ton—the first change in months. The composite now stands at $40.91 a gross ton.

Even though there were no reports of higher prices in other districts, the pressure which has been exerted on the price structure to keep quotations stable is spending itself in some areas. But overgrading—shipping material other than that ordered—has shown no sign of abating in recent weeks. In some places the practice is increasing. Outside of the gray market in steel, the scrap market is the only really free market in ferrous metals. Some large steel companies are still getting scrap at low prices being quoted, but in some areas the amount is declining and some users are shutting their eyes when they get the carloads.

THIS is one time the scrap brokers and dealers can not be dragged into the scrap scramble on the basis that they are bulling the market or that they are holding back scrap supplies. They don't have them. They can't get them. And they are doing everything they can to get something that at least looks like scrap.

All this has had its effect on proponents of hauling scrap from Europe and other parts of the world. Another commission is in the making. This time scrap imports may be speeded but it is still a fact that wishes are far ahead of what the realists think can be brought in. But any amount will help this winter. Fortunately steel people do not have to count on some of the fantastic figures on scrap imports that have been mentioned. But they are counting on getting some scrap from abroad. If they don't, and if higher scrap prices fail to bring out any more scrap than the present movement, the industry can not operate at top speed this winter.

When the steel consumer wakes up some morning soon and finds that he is (1) buying steel f.o.b. mill, (2) paying all the freight, (3) scrambling all over for material he can no longer get because of no freight absorption, he will be a sick man for awhile. Just how long he will be able to bear the brunt of the Supreme Court decision on cement depends upon how much weight he and his friends can throw around in Washington. The steel firms are bound to go f.o.b. The only way out for the consumer is legislation. It is doubtful if any time will be given to this question until the politicians are actually bedded down for their terms after the election.

HARD hit in addition to the steel consumers will be those small steel concerns which further process steel. These companies, such as sheet makers, cold finished bar producers and pipe manufacturers, all get their steel from various sources. They must make their price for their own product to compete with the mills which make the same item. If it is too high they might lose the business in normal times. If it is too low they will lose money. This is only a minor problem which will come to steel consumers when the change is made in the selling method.

The freight car program may run into an open switch by the first of next year. Despite all the talk and bombast in Washington and other places over the inability to make 10,000 freight cars a month, some car-building shops are looking for orders for January of 1949.

The voluntary allocation plan can be thanked for the smooth running of the freight car program now—even though the 10,000-car goal has been difficult to reach—but it is losing steam.

Most independent freight car builders or private car-building shops have no orders for delivery next January. The 90,000-car backlog at independent car shops is misleading. Of that backlog one company holds 40,000. The rest of the industry has hardly enough business to carry them through December.

With all the talk about the need for more freight cars, unless the railroads step up their orders within the next 5 weeks or so, the program next year will go far below the 10,000 goal and it won't be because of steel. It will be—of all things—because of no orders.

Steel ingot output this week is down 2.5 points from last week's revised rate of 95.5 to 93 pct of capacity. This slight drop was due to the holiday shutdown at some plants. A rebound is in order next week.

• **THE TIP OFF**—Universal Atlas Cement Co. is abandoning the basing point system of selling cement on July 9. Now Universal Atlas will sell f.o.b. the shipping point. By that time 74 other cement companies will have followed suit. This change results from a recent Supreme Court decision that rules out price fixing systems of selling in the cement industry. Here's the tip off—Universal Atlas is a subsidiary of the U. S. Steel Corp. U. S. Steel interprets the Supreme Court decision as law. U. S. Steel will very shortly follow with f.o.b. mill in selling steel.

• **GUSHER**—Price increases of around $30 a ton on oil country tubular goods have been announced by the Pittsburgh Steel Co., effective July 6. The company said it was losing money on these products in announcing that oil well casing will go up about 29 pct and oil well tubing about 25 pct.

• **MEETS DEADLINE**—The Lone Star Steel Co. and its 3000 Texas stockholders became sole owners of the $35 million blast furnace at Daingerfield, Texas, when checks totalling more than $4 million were paid the Federal Government. A substantial discount of the unpaid balance was taken by Lone Star as the contract allowed this discount should the plant be paid off before July 1.

• **WIDE RANGE**—There is greater diversification of industry in Pittsburgh than is generally recognized. More than 60 different main classifications exist in the principal group—metals and metal products. This fact emerges from a recent survey of Allegheny, Beaver, Washington and Westmoreland counties by the Allegheny Conference on Community Development.

• **BLOWN IN**—The second of two new blast furnaces built at the Southworks plant of the Carnegie-Illinois tapped its first iron last week. The 1500 ton per day unit increases the annual iron output of the Southworks plant by 560,000 tons and raises the total plant capacity to 4.2 million tons a year. Right now all stacks at the Gary and Southworks plants are producing iron. However—this does not mean more merchant iron for the foundries in this area. Their allocation of merchant iron will not be increased.

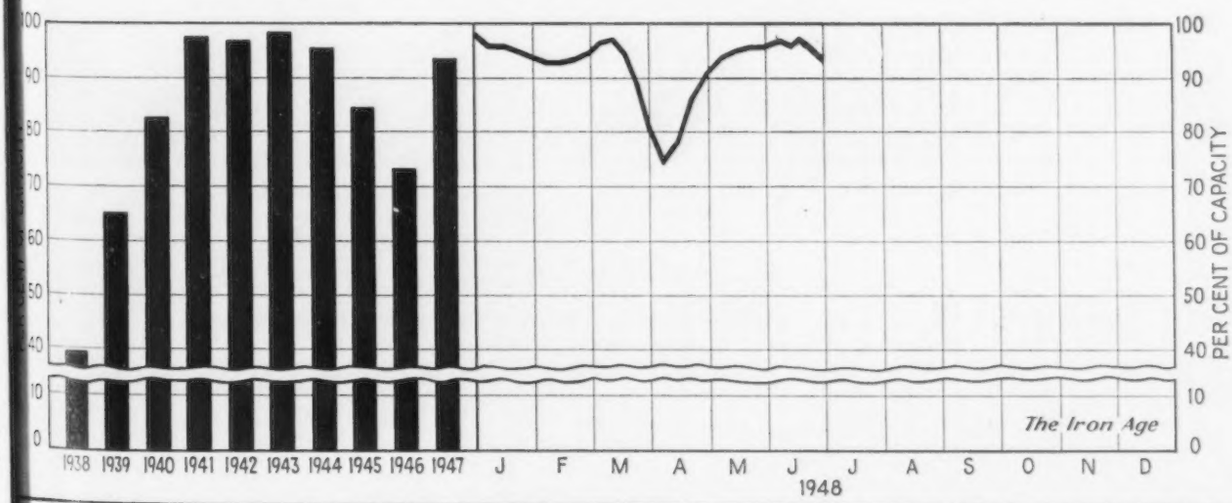
• **REFRACTORIES UP AND F.O.B.**—Harbison-Walker Refractories Co., following wage advances amounting to about 13¢ per hour, advanced refractory prices 5 to 10 pct, effective July 6. The company said that higher freight rates and raw material costs—particularly coal—also entered into the price move. General Refractories Co. advanced prices 5 to 10 pct effective July 8. These products are now on an f.o.b. mill basis with no freight absorption due to an FTC cease and desist order filed against the industry.

• **SCRAP EXPEDITER**—Robert W. Wolcott has been requested by Secretary of Commerce, Charles Sawyer, to trod the already-well-beaten path to German scrap piles. Mr. Wolcott's mission, as chairman of the Committee on Iron and Steel Scrap of American Iron and Steel Institute and the Steel Foundry and Scrap Industries' Committee for Expediting Iron and Steel Scrap, is "to see what can be done to eliminate the remaining obstacles which stand in the way of the shipment of scrap from Germany to the United States.

• **PROBE HALTED**—The Justice Dept. has decided not to press its search for evidence of price collusion in the freight car industry at this time. The grand jury investigation began in Nov. 1947 after car builders refused to let the FBI inspect pricing data and other company documents. "We decided it wasn't advisable to continue the investigation at this time," a Justice Dept. attorney said. No indictment will be sought at present, thereby terminating the probe. Companies under investigation were Bethlehem Steel Co., Pullman-Standard Car Mfg. Co., American Car & Foundry Co., Ralston Car Co., Greenville Steel Car Co., Pressed Steel Car Co. and Magor Car Co.

• **MORE CHARGES**—More charges have been filed in the Government's "trust-busting" campaign against industry. The Justice Dept. has filed suit in conjunction with the issuance of a Federal Trade Commission order charging unfair competition in violation of Sect. 5 of the FTC Act. The JD suit names Air Reduction Co. Inc., Liquid Carbonic Corp., and Wyandotte Chemicals Corp. FTC names Air Reduction and its subsidiary Pure Carbonic; Liquid Carbonic Corp.; and Michigan Alkali Co. now doing business as Michigan Alkali Div. of the Wyandotte Chemicals Corp.

Steel Ingot Production by Districts and Per Cent of Capacity



	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
	95.0*	96.0	91.0*	90.0	89.0*	100.5*	89.5*	103.0	102.0	95.5	106.0	89.5	91.0	95.5*
	91.0	94.0	91.0	87.0	93.0	99.0	95.5	101.0	102.0	97.5	103.0	89.5	91.0	93.0**

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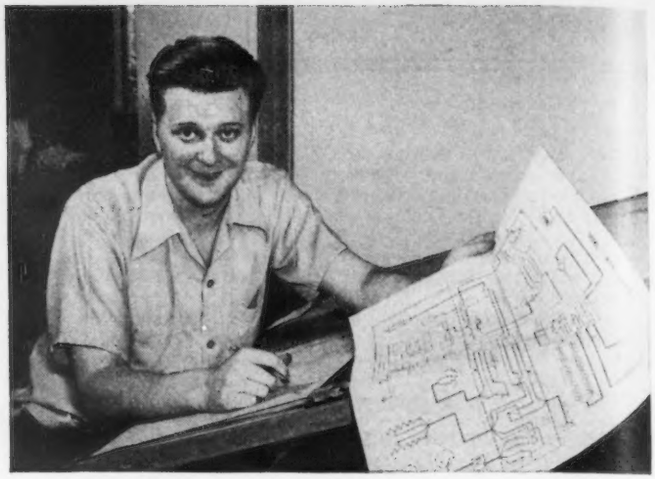

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Steel Industry Poised To Plunge Into F.O.B. Mill Sales System

This Lays Basing Point Battle Squarely Upon Laps Of Steel Consumers

By TOM CAMPBELL
News-Markets Editor

New York

• • • **Aside from the Supreme** Court dictates, now is the best time for steel to go f.o.b. mill. For years the trend has been moving that way. The hobgoblin is no longer in the closet. The industry will soon plunge into a new selling practice which may change the face of industry.

Demand is heavy. Consumers will pay almost any price to get steel. They don't care if they pay the freight or not. Under such conditions the experiment of an f.o.b. mill system certainly won't bear heavily on steel firms. Nor on steel users—at first.

But if the dire predictions made by steel people are true, normal times will bring the acid test. Then if the mortality of small and large business because of distance from steel centers rises the steel user must shoulder the battle.

The steel industry can't do anything—except follow the rulings of the Supreme Court and listen to men like Federal Trade Commissioner Lowell B. Mason who definitely and bluntly hold that the multiple basing point and zoning system of selling are contrary to the law of the land.

Arguments pro and con the multiple basing point method are as cold as last night's potatoes. The only way that method of selling can be restored in the steel industry, after the contemplated move is made soon, would be by legislation. The consumer will have to fight that battle. For the first time in years the steel industry is going to make a change before someone uses a meat axe on it.

Steel firms are not willingly going to an f.o.b. mill basis. There is nothing left for them to do. The going will be rough on those mills which are concentrated in an area where far more steel is produced than is consumed. This will not show up as long as the current bubble of heavy orders remains intact. But when times get slim again—as they always do—areas like Pittsburgh and the Ohio Valleys will need all the imagination and flexibility of action possible to stay in the swim.

The effect of an f.o.b. mill system will be felt in manufacturing costs. No longer will the steel user be able to anticipate that his costs will be similar due to equalizing of freight by steel companies. He may have to try to get all the steel he can in his own bailiwick. If he can't get it there he must pay heavy freight charges. This he can afford now. But can he later? Time alone will tell. But it is for sure that the headaches of steel users in the future will make migraine look like a polite sneeze.

Steel firms behind the eight ball in the new selling practice will have to consider new plants. Some have already done this. But aside from the contemplated eastern plant of United States Steel, no major plans for other firms have been unfolded. Detroit is being mentioned as a possible site for a new mill. Also there is interest being shown in the Gulf areas. But nothing definite has loomed as yet.

It is likely that many steel firms —notably the smaller ones—will concentrate on certain steel items. Such firms will also select their cus-

A guy can dream—Or can he?

tomers on a long term basis, weighing carefully consistent demand and distance from the mill. Deliveries, quality and perhaps price will be used as talking points. But some of the larger companies,—U. S. Steel, Inland, Bethlehem, and National Steel—will find that an f.o.b. mill system will not greatly injure either position or their sales. Most of these firms, except U. S. Steel, have pulled out from distant territories long ago. Sales from such areas have been on a cost plus freight for sometime.

U. S. Steel has consistently fought the FCT on the f.o.b. mill system—until the Supreme Court ruled on cement—even though such a method of selling would place the corporation in a good position. The reason for this might be that U. S. Steel has for the past 10 years at least placed customer relations as the major "must". This firm will probably be the leader among the bigger firms in going to an f.o.b. mill basis. It will have the impetus to do so because it is one of the larger makers of cement. It could hardly sell cement on an f.o.b. mill basis without doing the same thing in steel.

Now after 10 years or more of speculation on the possible effects of an f.o.b. mill system in steel the "experts" will soon be able to establish new arguments based on the real thing. If it works too badly the steel consumer will find help—he hopes—in Congress. If it works well, much to the surprise of steelmakers, then it can be tagged as progress and a "new era".

Crucible Adds Warehouse

Harrison, N. J.

• • • **A new warehouse** for specialty, alloy, tool and stainless steels has been formally opened here by the Crucible Steel Co. of America. The new facilities are part of a $30 million company-wide plant and warehouse improvement program.

The Atlantic seaboard warehouse serves two purposes. It provides immediate steel deliveries to the company's customers in the New Jersey and New York territories. And it permits overnight deliveries to the company's Philadelphia and New England branch warehouses.

Stock will include stainless steel in the form of bars, sheet, strip and special shapes; billets for forging; high speed steels; all grades of tool steels; and a complete line of high speed and Rexalloy tool bits.

Crucible Steel now operates 3 mill pool warehouses, at Harrison, Syracuse, N.Y. and Pittsburgh, and 23 branch warehouses from coast to coast.

Car Manufacturers Find Costs Of New Models Are Higher

Detroit

• • • **The cost of** bringing out new models has far exceeded original estimates by car manufacturers, it is reliably reported. Some manufacturers, checking their present costs against original estimates, are finding that rising building costs, tool and die and labor costs, have completely knocked out forecasts made as recently as 6 months ago.

Recently it was disclosed that tooling, manufacture and purchases of new machines and the rebuilding and redesigning of others to produce the 1949 Ford cost approximately $72 million and required more than 10 million man-hr.

Of this amount, $37.4 million was spent for designing, fabricating and trying out special machines, tools, dies, fixtures and jigs. This required 6 million man-hr according to Ford officials.

Another $34.6 million went to purchase, install, tool and try out machinery, and to replace or renew parts of existing machines.

In Ford's own tool room and those of Ford suppliers, 4 million man-hr were spent in the actual manufacture of tools to make parts for the Ford '49er.

Ford draftsmen turned out 4600 completely new parts, prints and production drawings for bodies, chassis and engines for the cars. Ford is actually manufacturing 2000 major parts for the new cars; the balance are made by suppliers.

In view of rising labor costs, anticipated increases in the cost of machines, tools and parts, it is relatively certain that Ford's experience will be duplicated by GM and Chrysler in bringing out their new cars. Latest indications are that neither line will be ready for public showing much before the end of this year. Some sources believe that Buick will be the next GM model to be introduced.

Prices Increased By G. E.

Schenectady, N. Y.

• • • **Prices on** industrial motors and generators larger than one hp have been increased 5 pct by the General Electric Co. according to a company announcement. Industrial control equipment has been raised 10 pct.

Higher cost of materials and transportation in addition to the 8 pct wage increase granted June 11 were cited as reasons for price boosts.

AMERICAN IRON AND STEEL INSTITUTE — **Blast Furnace Capacity and Production—Net Tons** — **MAY - 1948**

	Number of companies	Annual blast furnace capacity	Production							
			Pig Iron		Ferro Manganese and Spiegel		Total		Percent of capacity	
			Current month	Year to date	Current Month	Year to date	Current month	Year to date	Current month	Year to date
DISTRIBUTION BY DISTRICTS:										
Eastern	11	13,093,560	924,317	4,339,594	26,280	130,844	950,597	4,470,438	85.7	82.2
Pittsburgh-Youngstown	17	25,588,120	1,999,928	9,294,430	20,184	118,275	2,020,112	9,412,705	93.2	88.5
Cleveland-Detroit	6	6,495,000	491,188	2,414,578	-	-	491,188	2,414,578	89.2	89.5
Chicago	7	14,700,290	1,040,067	4,937,115	-	-	1,040,067	4,937,115	83.5	80.8
Southern	8	4,949,660	378,834	1,779,586	9,319	39,439	388,153	1,819,025	92.5	88.5
Western	3	2,612,300	187,051	917,182	-	-	187,051	917,182	84.5	84.5
TOTAL	35	67,438,930	5,021,385	23,682,485	55,783	288,558	5,077,168	23,971,043	88.8	85.6

Freight Car Building Program May Hit Open Switch By Next Year

With Only 6-Month Backlogs Most Shops Need Orders Before Mid-August

By GEORGE F. SULLIVAN
Pittsburgh Regional Editor

Pittsburgh

• • • **Unless the railroads** order a lot more cars within the next 6 weeks freight car production will be off sharply next January, industry sources predict. The carbuilding backlog is not as healthy as it looks because it is unbalanced. Most of the nation's independent carbuilders have little or no business booked for January delivery. If they don't get some substantial orders by the middle of August they are admittedly headed for trouble next year.

That trouble—possible failure to come anywhere near the 10,000-car a month goal—could mean repercussions in Washington. Some sloppy thinkers may then blame the voluntary steel allocations program. Evidence at hand now indicates that if it happens the railroads, not the contract carbuilders or the voluntary program, but the steel companies, will be to blame.

On May 31 the industry had 127,689 cars on order. Of these, 89,701 were in the hands of the independent or contract car shops. At May production rates the 127,689 figure looks like a 14-month backlog. It is nowhere near that. Of the approximately 90,000 cars on order in the contract shops about 40,000 are on the books of one fabricator, American Car & Foundry Co.

With the exception of one shop in the south, most of the rest of the independent companies have only enough orders on their books to carry them through December. According to well informed sources, their 50,000-car backlog will have to be stepped up sharply and soon cars in the first quarter of 1949. to assure an even flow of freight

In May the railroads ordered only 2230 cars. (They ordered 8713 in January, 10,698 in February, 13,427 in March, and 18,252 in April.) Some 5000 cars are now in the inquiry stage. The accompanying box shows car deliveries for 1948.

Orders for October rolling must be in steel company hands not later than Sept. 1. Carbuilders are assured only of their total overall steel needs under the voluntary allocations program, but they often have to shop around to find a mill that has car steel space open. This means the carbuilder will need at least 2 weeks from receipt of orders before he can get his steel ordered for standard cars. Generally speaking, October rolling means January car shipments.

Carbuilders want a 90-day lead time, a figure set by WPB during the war. It means steel should be coming into the carbuilder's shop 90 days before the car is to be assembled. Not all components are expected 90 days in advance but this is the goal. Some don't arrive until a week before assembly. Material ordered in August may not be scheduled for mill rolling until November. So for January's cars Aug. 15 is the railroad's order deadline. That could be stretched somewhat in some shops but the contract carbuilders as a whole could scarcely wait until mid-September and still assure the roads of producing 7500 cars in January.

1948 FREIGHT CAR DELIVERIES

	Contract Shops	Railroad Shops	Total
January	6561	2403	8964
February	6306	2157	8463
March	6940	2362	8302
April	6726	2326	9052
May	6651	2541	9192

When the order backlog in most shops drops to its present low these fabricators face a cut in their steel allocations. It has been proposed in Washington that quarterly allocations be maintained even to shops that don't have enough business on the books to require that amount of steel. Under this plan the best 3 consecutive months of postwar car shipments would determine the steel quota for each shop. Carbuilders would then go out and beat the bushes for business. If any one could not report firm orders to use its full allocation before it was scheduled for rolling, the steel mill would have to divert it to another carbuilding shop.

Data has not been assembled in Washington for fourth quarter carbuilding steel requirements and probably won't be until mid-August. But a task committee meeting late in June agreed to extend third quarter requirements of about 750,000 tons into the last quarter, believing there'll be little change in the pattern.

There are still some minor complaints of hitches in the voluntary steel allocations program for freight cars. But publicly—and more important, privately—most carbuilders agree it is working very well indeed. The steel companies are proud of it too. A little resentment at the railroad car shops is apparent of late in the independent, or contract car shops.

The monthly production goal of the railroad shops, originally set at 1500 cars and boosted once to 2000 is now at 2500. In May the railroad, or captive shops turned out 2541 cars. In the offices of the contract carbuilders there are mutterings about the railroad shops getting more than their fair share of steel. But it is realized that the carriers may occasionally push a little of the steel they get under the maintenance and repair section of the program into their new-car shops to break bottlenecks. The railroads counter with the reminder that most of the contract shops make products other than freight cars.

The importance of the carbuilding program is not up for debate now. That is conceded. Its tempo was slowed somewhat—along with all other steel fabricating—by cold weather last winter and the coal strike. The carbuilders are not asking for mandatory government allocations; if other big users get them they'll probably be inclined to climb on the bandwagon. But in the offices of most of the contract shops the feeling is there is nothing wrong with the program that some nice, well distributed orders won't cure.

Industrial Briefs . . .

• CORRECTION—On p. 124 of June 17 issue Mr. C. M. White, Republic Steel head stated that freight rate increases since 1939 were up 125-165 pct. This should have been up 25 to 65 pct under the 1936-39 base.

• OUTING—The Traffic Club of Pittsburgh will hold their annual Invitation Golf Outing and Dinner at the Pittsburgh Field Club on July 15, 1948. Arrangements for the outing are in charge of F. J. Ryan, district representative, Detroit, Toledo & Ironton R.R. Co.

• APPOINTS PRESIDENT—Election of Clement J. Freund, dean of the College of Engineering at the University of Detroit, as president of the American Society for Engineering Education for the 1948-49 year has been announced. Mr. Freund was vice-president of the society last year.

• BUILDING FURNACE — Electro Refractories & Alloys Corp., Buffalo, has started work on an electric furnace at Cap-de-la-Madeleine, Quebec, where the company will produce silicon carbide for use in its Buffalo plant. Cost of the project is estimated $350,000.

• MOVES—The general offices of Ceco Steel Products Corp., manufacturer of metal construction products, were moved recently into a new office building at 5601 W. 26th St., Chicago, as another step in the firm's countrywide expansion program.

• SILVER JUBILEE — The Peter F. Loftus Corp., consulting engineers of Pittsburgh is celebrating its twenty-fifth anniversary this year.

• SELLS FOUNDRY — The Metal & Alloy Specialties Co., Buffalo, has sold its wartime aluminum foundry to a soft-drink bottling company for $50,000. The two-story building has been idle since the company consolidated its operations at its main plant in Buffalo.

• BUILDS RESERVOIR — A new $200,000 water conservation system began operating recently at the Timken Roller Bearing Co. to insure its plants the 7,200,000 gal of water they need daily for operation. The system consists of a new 2 acre, 10 million gal reservoir and a cooling tower.

• NAMES HEADS—Ralph A. Mitchell, vice-president of the Pittsburgh Forgings Co., Coraopolis, Pa., was elected president of the Drop Forging Assn. W. Clair Shaffer, assistant to the president of the Michigan Forging Co., Detroit, was elected vice-president.

• CHANGES NAME — The Consolidated Steel Corp., Los Angeles, has changed its name to Consolidated Western Steel Corp.

• ASM DIRECTOR — Walter Morrison, has been appointed director of public relations for American Society for Metals, replacing Graves Taylor who has resigned. Mr. Morrison was managing editor of Advertiser magazine and brings a wealth of experience to ASM.

• NEW QUARTERS — Federated Metals, division of American Smelting & Refining Co., has moved its New England office to new and improved quarters in the Statler Office Bldg., 20 Providence St., Boston 16.

• ELECTS OFFICERS—Donald H. Lyons purchasing agent of Johns-Manville Corp. has been elected president of the Purchasing Agents Assn. of New York. G. W. Howard Ahl, Columbia Ribbon & Carbon Mfg. Co. and Charles O. Minot, A. H. Bull & Co., Inc., were elected vice-presidents.

• MACHINERY ORDER—Raizada K. N. Modi, an Indian industrialist, has placed a $1 million order for textile machinery with the H. & B. American Machine Co., Pawtucket, R. I.

Republic Ships First Large Diameter Pipe From New Gadsden Mill

Cleveland

• • • **First shipment** of pipe from Republic Steel Corp.'s new large diameter pipe mill left Republic's Gadsden plant consigned to the Southern Natural Gas Co., Birmingham. The shipment is the first of a total of 140 miles of 24-in. pipeline which Republic will make on the new mill for the gas company. The first shipment amounted to about 2 miles of pipe, and when operating at full capacity the mill will produce about 65 miles per month.

E. I. Evans, manager of Republic's operations in the South, said that the mill had been designed and built in what he believed to be record time.

Mr. Evans pointed out that although the mill is now producing commercial tonnages, it will be some time, probably the first of the year, before it is operating at its intended capacity.

"When the pipe mill is producing at capacity, we will use most, if not all, of the output of our plate mill. We have notified the relatively few customers whom we have supplied with plates in the past that when that time comes we may not be able to deliver any plate to them. The tremendous need for natural gas in this area has convinced us that this course is for the greatest benefit of all concerned. Since the pipe mill will not take our full production of plates for some period of time, we will meanwhile be able to supply a sizeable percentage of the needs of the customers we have been serving."

The pipe mill is able to produce electrically welded steel pipe in diameters from 20 in. to 30 in. and in lengths of 30 ft. In some instances, two sections will be welded together before leaving the plant so that shipment of single sections 60 ft in length will be possbile.

First Steel Wage Move

New York

• • • **The first crack** in the steel industry wage structure appeared last week when Alan Wood Steel Co. signed an agreement with the United Steelworkers for 2 year period granting a 5¢ per hr wage rise with an additional 5¢ an hr—for retirement benefits.

Truman Dispells Worry Over Steel Allocation In New Draft Bill Act

Washington

• • • **The threat of** an immediate return to all-out steel allocations was dispelled last week.

President Truman, in an open letter to Commerce Secretary Sawyear, declared that he did "not consider it appropriate" to invoke the authority to allocate steel contained in the new Selective Service Law, but added that he was "prepared to exercise this authority should it prove necessary."

Thus, the industry is off the spot, for the time being. But the inescapable fact is that the White House is already in possession of full authority to allocate steel for defense. The fact that Mr. Truman says he does not now intend to use the control power granted him by Congress is in no way a guarantee that advantage will not be taken of the new statute tomorrow.

Mr. Truman apparently decided that the alternative to full exercise of the new allocation powers lay in the setting up of a voluntary allocations program for defense needs within Mr. Sawyer's Office of Industry Cooperation.

"I am asking you to proceed immediately to develop a voluntary allocations program under the authority of Public Law 395 covering the requirements of the armed forces for steel mill products and steel contained in manufactured products," the President wrote.

And, with a nod to the good intentions of Representative Ploeser, R., Mo., author of the allocations amendment to the draft law, Mr. Truman continued: "In setting up this program it is essential that adequate provision be made to insure that small businesses are in a position to bid on orders for the armed forces on equal terms with larger producers, insofar as the availability of steel to meet their production requirements for such orders is concerned," the President stated.

Mr. Truman's letter to Secretary Sawyer was made public only 24 hr after Senator Wherry, R., Neb., chairman of the Senate Small Business Committee, issued a statement denouncing the Ploeser amendment and suggesting that the system of voluntary allocations was "a far better alternative, if free enterprise remains our national objective." He added that his committee "would oppose, in every way possible, the putting into effect of the President's authority to impose mandatory controls over the steel industry."

They Call It "Inconsequential News"

Occasionally a press agent forgets about management looking over his shoulder and writes the way he feels. This is what we imagine happened to the purveyor of information for the Lindberg Engineering Co., who managed to get across his message without losing his sense of humor. It's a wow!—Editor.

"Ralph S. Poulsen of Lindberg Engineering Company, Chicago, manufacturers of heat treating and melting furnaces has been appointed district sales manager for the Ohio territory.

"In a moment of weakness about 8 years ago Lindberg hired him. Those were the years when a company was lucky to be able to hire anyone, so Poulson thusly entered the Lindberg scene.

"As much as we hate to admit it (he'll see this and want a raise) he's a darn good man, and has an excellent Lindberg background. To learn the furnace business from the bottom up he has actually worked in our factory—and KNOWS furnaces because he has helped build them. After this indoctrination he entered the Chicago office sales department,—and from there went to the Indianapolis, Ind. office as assistant sales manager for that district.

"Then came a period of about a year and a half,—the period of Poulsen's indiscretion of which we speak in hushed whispers. Big money lured him away from Lindberg to a big time advertising job in the East—but the life of a Huckster was not for our boy Ralph. The call of the furnaces was too strong, and now he is back in the fold—happy to give up his $50,000.00 a year advertising job for the $200.00 a month of a furnace salesman.

"Our information about his personal background is quite sketchy. We've heard that as a senior in high school he was voted "The man least likely to succeed." As far as we know he's never been in jail, but there's always a first time and perhaps Ohio will get to do the honors.

"He has illusions that he is a good skier, so if you ever want to sell him anything, just make like you're interested in skiing, and you'll be in like Flynn.

"Not that you'd ever want to get in touch with the guy,—but here's his office address: Lindberg Engineering, NBC Building, 815 Superior Ave., Cleveland 14, Ohio—Phone: Main 5549. If it takes a long time for him to answer the phone, its just because it's so difficult to walk around the office with skis on."

Coming Events

July 16-24 American Road Builders' Assn., convention and Road Show, Soldier Field, Chicago.

July 26-27 Institute of Scrap Iron & Steel, midyear meeting, Atlantic City.

Aug. 30-Sept. 3 American Chemical Society, national meeting, Washington.

Sept. 6-10 American Chemical Society, national meeting, St. Louis.

Sept. 13-17 American Chemical Society, national meeting, Portland, Ore.

Sept. 13-17 Instrument Society of America, conference and exhibit, Philadelphia.

Sept. 28-Oct. 1 Assn. of Iron & Steel Engineers, Convention and Iron and Steel Exposition, Cleveland.

Oct. 5-7 Industrial Packaging Engineers Assn., Industrial Packaging and Materials Handling Exposition, Chicago.

Oct. 5-9 Concrete Reinforcing Steel Institute, semiannual meeting, Asheville, N. C.

Oct. 11-13 National Lubricating Grease Institute, annual convention, Chicago.

Oct. 13-15 Porcelain Enamel Institute, annual forum, Urbana, Ill.

Tin Smelting to Continue

Washington

• • • **Government operation** (through RFC) of the Longhorn tin smelter at Texas City will be continued for two more years, until June 30, 1951, under a compromise measured approved in the closing hours of Congress.

Construction Steel . . .

• • • **Fabricated steel awards** this week included the following:

2800 **Tons,** Philadelphia, Neurological Building for Philadelphia General Hospital, through McCloskey & Co., Philadelphia, to American Bridge Co., Pittsgurgh.

1130 **Tons,** Council, Okla, Power House, Mustang Station Unit No. 1 for Okla. Gas & Electric Co. to Kansas City Structural Steel Co., Kansas City, Kan.

450 **Tons,** North Chicago, Abbott Laboratories Building to American Bridge Co., Pittsburgh.

300 **Tons,** Lancaster Co., Pa., bridge, Pa. Dept. of Highways, to Bethlehem Steel Co., Bethlehem.

105 **Tons,** Kokomo, Ind., bridge, Pennsylvania R. R., to American Bridge Co., Pittsburgh.

• • • **Fabricated steel inquiries** this week included the following:

5000 **Tons,** Plymouth, Wash., McNary Dam, U. S. Bureau of Reclamation.

3700 **Tons,** Shelton & Derby, Conn., steel plate girder superstructure, Housatonic Bridge on Ansonia Expressway. Bids July 19.

2900 **Tons,** Philadelphia, powerhouse for Philadelphia Electric Co., July 12.

2000 **Tons,** Jackson, Mich., factory building for Clark Equipment Co.

2500 **Tons,** Springfield, Ill., colosseum for the State of Ill.

1000 **Tons,** Peoria, Ill., junior high school building.

420 **Tons,** Millville, N. J., bridge, N. J. Dept. of Highways, Ole Hansen, Pleasantville, N. J., low bidder.

300 **Tons,** Harrisburg, Pa., warehouse building, S. V. P. Quackenbush, Scranton, Pa.

120 **Tons,** Philadelphia, reconstruction of St. Ann's Church, to Morris Wheeler, Inc., Philadelphia.

355 **Tons,** Beverly, Mass., 3 steel stringer bridges, Northern Circumferential Highway.

• • • **Reinforcing bar awards** this week included the following:

120 **Tons,** Park Ridge, Ill., Illinois Bell Telephone bldg. to Jacobson Bros., Chicago.

100 **Tons,** Des Plaines, Ill., telephone building to W. H. Lyman Co.

• • • **Reinforcing bar inquiries** this week included the following:

725 **Tons,** Walla Walla, Wash., Mill Creek channel improvement, Portland District, Corps of Engineers, Serial Eng-35-026-48-919, bids July 16.

345 **Tons,** Shelton & Derby, Conn., steel plate girder superstructure, Housatonic Bridge. Bids July 19.

275 **Tons,** Sterling, Ill., school building.

160 **Tons,** Beverly, Mass., 3 steel stringer bridges, Northern Circumferential Highway.

• • • **Railroad car awards** this week included the following:

Santa Fe R. R. has ordered 250 70-ton hopper cars from the American Car & Foundry Co., Madison, Ill. Grand Trunk Western Ry. has ordered 200 50-ton box cars from Pullman-Standard Car Mfg. Co., Michigan City, Ind. The Pennsylvania R.R. has ordered the following from American Car and Foundry Co., Berwick, Pa.: 3 coaches and 2 baggage dormitory cars; 19 10-roomette and 6 double bedroom cars; 1 6-double bedroom buffet lounge car; two diners and four coaches with bar lounges.

• • • **Railroad car inquiries** this week included the following:

The Army Transportation Corps is inquiring for 200 10,000 gal. capacity tank cars.

50 YEARS AGO

THE IRON AGE, *July 7, 1898*

• "The first 6 months of 1898 were productive of remarkable activity in Wall St., gaged by the volume of transactions in stocks. No less than 52,500,000 shares changed hands in the first half of the year, which is more than double the amount of the corresponding period of 1897."

• **"Shareholders of the Pullman Palace Car Co. will receive a dividend of 20 pct in cash and 50 pct in new stock for each share they now hold. This disposition is one of the greatest returns to investors ever made in financial history."**

• "A new industry has been established in Chicago to manufacture Wilder's patent metal coating intended to take the place of spelter which is used in the so-called galvanizing process. This coating is an alloy of zinc, tin and aluminum and is claimed to provide a coating for iron and steel much superior to any now known."

• **"French steelmakers have devised a new method of hardfacing armor plate which takes advantage of the fact that by suitably controlling the process of cooling, it is possible to obtain some of the newer alloys of iron with nickel, cobalt and manganese in either a hard or a malleable condition. The hard face is obtained entirely by a process of tempering, the plate having the same chemical composition throughout."**

• "Cast steel has become a most important material of locomotive construction in place of iron formerly used. The past year has witnessed marked improvement in its manufacture and in the design of parts made of it."

• **"In order to celebrate in a fitting manner the discovery of the electric pile, the city of Como, Italy, which is the birthplace of Alexanda Volta, has decided to hold an international electrical exposition in 1899."**

Employment Drops Off

Washington

• • • **Employment in** the iron and steel industries showed a general decline during May, according to a summary by the Bureau of Labor Statistics, reflecting scattered work stoppages and material shortages. Construction employment continued its rise with more than two million now in building activity, close to last September's postwar peak. Total non-agricultural employment is 1.4 million above the year-ago figure of 43.4 million.

Buys Steel Casting Plant

Washington

• • • **Scrambled steel** (armor) casting facilities, surplus since the war, at Depew, N. Y., have been sold to the wartime operator, Symington-Gould Corp. of Rochester subject to the national security (recapture) clause.

Constructed at an original wartime cost of about $3.8 million, the sales price was $408,314.40 and the purchaser plans to spend $75,000 in improvements.

More Durable Goods

Washington

• • • **Production of durable** goods in May rose above the April level but were still below first quarter average, the Federal Reserve Board reports. Iron and steel production rose with increased coal supplies but automotive output declined because of work stoppages and material shortages. Manufacture of nondurables generally continued at April levels.

Weekly Gallup Polls . . .

Dewey's Long Popularity Climaxed By GOP Nomination

Princeton, N. J.

• • • **In nominating** Gov. Thomas E. Dewey, Republican Party delegates for the fourth consecutive time since 1936 selected the man most popular with their party voters at the time of nomination, according to George Gallup, director, American Institute of Public Opinion.

Alfred M. Landon in 1936, Wenwell Willkie in 1940 and Governor Dewey in 1944 were each leading in polls by the institute among Republican voters at the time the convention delegates named them to head the ticket.

During the same period the Democrats, too, picked the candidate most popular with their party, Mr. Roosevelt.

If the record since 1936 is any criterion, the chances of dark horse candidates being picked by deals in smoke-filled rooms appear to be declining in American politics.

While there is maneuvering and horse-trading at every political convention, the last four conventions have at any rate turned up with the most popular man in the party winning the prize. It is up to the delegates to do the deciding, but the wishes of the rank and file of party voters do apparently tend to get translated into action at the conventions.

Gov. Dewey held the lead in popularity nearly all the time; as far back as May 1945 polls by the Institute found him the choice of 59 pct of his party for the nomination in 1948.

Twice his popular position was threatened by Harold E. Stassen. In May 1946 Mr. Stassen ran neck and neck with Gov. Dewey and in May of this year Mr. Stassen forged into the lead after his spectacular victories in the Wisconsin and Nebraska primaries. But, following the Oregon primary in which Gov. Dewey defeated his Minnesota rival, the New York Governor regained the lead and held it to convention time.

But this year his popular lead as a candidate was not as great, proportionally, as it was in 1944.

When Republican voters in June 1944 were asked who they wanted to see nominated, 58 pct named Gov. Dewey, as compared to 33 pct in the final institute poll of Republican voters this June.

The standings of the leading GOP candidates in 1944 and today contrast as follows:

	Last Time (June 1944) Pct
Dewey	58
MacArthur	13
Bricker	12
Stassen	6
*Willkie	8
Others	3

* Willkie withdrew from the race in April after his defeat in the Wisconsin primary.

	This Time (June 1948) Pct
Dewey	33
Stassen	26
Vandenberg	13
MacArthur	11
Taft	10
Warren	2
Jos. Martin	1
Others & no choice	4

•

• • • **Now that the** nomination is over, Republicans face another quadrennial problem: raising large quantities of cash to pay for their campaign. Democrats too will be scratching around for money in a few weeks.

Traditionally, men of wealth in both parties put up most of the campaign funds, but the possibility of getting the money directly from the people through widespread collection of small sums is indicated by a survey conducted by the institute. A whole new pattern for the financing of political parties in the future is suggested by the results of this survey.

It shows that a substantial number of people in both parties, would be willing to contribute $5 each to the party of their choice. When asked by interviews, "If you were asked, would you contribute $5 to the campaign fund of the political party you prefer?", more than one in every four indicated a willingness to contribute. Obviously the most efficient way of collecting such money would have to be worked out; experiments would be needed to find the right procedure with the least overhead cost. But if ways could be worked out, the willingness to give is indicated.

Millions of Voters Indicate Willingness to Contribute To Presidential Campaign Fund

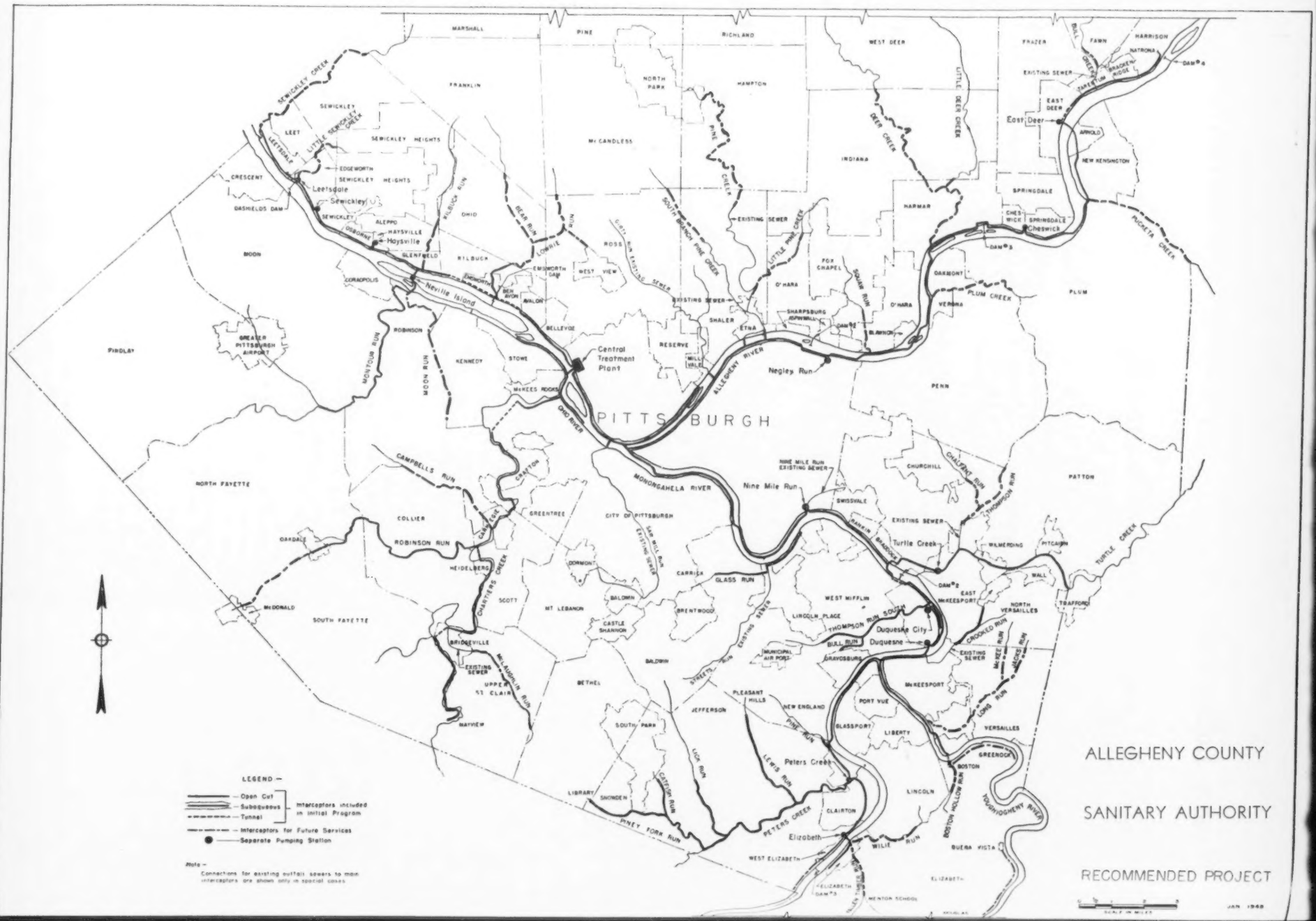
o o o

Republicans show greater willingness than Democrats. On the basis of the survey the institute estimates that there are some 7½ million in the ranks of the Republican party who stand ready to come across with $5, and some 6 million in the Democratic party—if an efficient collection system could be worked out.

Henry A. Wallace has already demonstrated the possibilities of collecting campaign funds from voters.

Most of his audiences not only pay to hear him speak but generally contribute when they get inside the meeting, in response to appeals from the platform. While some large individual contributions have been received, Mr. Wallace is reported to have raised several hundred thousand dollars in small amounts ranging from a few dollars up.

Students of government have long deplored the fact that rich men who contribute large sums to presidential campaigns often expect favors or appointments in return if the candidate wins. This system of spoils would be outmoded if the major share of a party's campaign funds came from the people themselves in small amounts.



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Abatement of Stream Pollution Being Pressed in Pennsylvania

Program Includes Industrial Wastes and Municipal Sewage Systems

BY JOHN ANTHONY
Eastern Regional Editor

Harrisburg, Pa.

• • • **The Commonwealth** of Pennsylvania is pressing home a broad program of pollution abatement in its waterways under the active direction of the Governor who insists that the State's waters be cleaned up for the benefit of its people for drinking and bathing purposes, as well as for recreational and industrial uses. The program is two-pronged, involving more adequate treatment processes for industrial wastes and a wider adoption of modern methods of sewage treatment methods by the smaller municipalities.

A program for the elimination of pollution by industrial wastes, began in 1945 with the enactment of enabling legislation. Health officials admit that industrial wastes represent a great pollution menace because of the volume of certain waste products which have a malignant effect on the waterways. Also, less information is known about acceptable techniques for neutralizing some industrial waste products.

Pennsylvania is leading the way in its program for preventing industrial waste pollution, probably because of its high concentrations of industries producing obnoxious waste products, such as coal, steel and paper, and because of its rich heritage of natural woodlands and waterways.

The State clean streams program is under the administration of its Dept. of Health whose chief official is Dr. Norris W. Vaux. The department's Sanitary Water Board is carrying out the pollution abatement program through the Bureau of Engineering which is under the supervision of Harry G. Knox, special technical adviser to the Board. Maintenance of waterways is under the control of the State's Dept. of Forests and Waters whose chief is Adm. M. F. Draemel.

The steel industry in Pennsylvania is cooperating with the Sanitary Water Board and a purely advisory group of technical men from most major steel producers operating in the State. Members of the committee include: George Gilliard and Grant A. Pettit of Armco Steel Corp.; O. M. Tishlarich, A. M. Byers Co.; J. W. Harper and T. W. Wright of Babcock & Wilcox Co.; R. S. A. Dougherty, Bethlehem Steel Co.; J. B. Carlock and R. S. Kline of Jones & Laughlin Steel Corp.; Richard D. Hoak, Mellon Institute of Industrial Research; M. F. Coon, Sharon Steel Corp.; R. E. Zimmerman and T. F. Reed of United States Steel Corp.; and L. B. Patin, Carnegie-Illinois Steel Corp.

The steel industry contributes to stream pollution in several directions. Probably most important is pickle liquor disposal. The industry uses pickling acids by the ton and acid residues are found in the waste water in widely varying amounts. The Sanitary Water Board is now working with the committee to determine acceptable standards of maximum acid content in mill wastes.

Acid waste in significant proportions kills off the marine life and bacteria in the rivers and streams which aid them in self-purification.

Another source of acid waste originates in the bituminous and anthracite mines of the State. It is particularly acute in the strip mines where rain water has free access to the working, picks up sulfur and is oxidized to become sulfuric acid.

Now all deep and strip mine operations are required to obtain operating permits which are not granted without Sanitary Water Board approval of waste water disposal plans. Also strip mine operators are required by law to back fill the mine after it is abandoned. A real problem lies in the hundreds of abandoned strip mines in the State that have not been leveled off. The State has appropriated funds to carry out this work. Acid discharges from deep coal mines are reduced by sealing them off to prevent the entrance of air.

Waste water from byproduct coke production carries phenolic or carbolic residues which are obnoxious in their most dilute forms. Concentrations as low as 1 part per billion leave a persistent bad taste in drinking water. Currently available processes are effective in removing these residues from waste water to the extent of 98 pct. But the Dept. of Health is adamant that the balance should not be permitted to pollute the waterways.

Other waste disposal problems of the industry that are not as difficult to take care of include the scrubber dust taken from blast furnace flue gases, and scale from rolling operations. Both can be removed in a settling tank. Oil, originating largely from roll bearings, must be removed from the waste water by flotation.

Chemical treatment methods for industrial waste often require an appreciable plant capital investment that sometimes seems unreasonable to some businesses. Very often, however, the value of recovered raw materials is sufficient to recover the capital expenditure within a short time, sometimes within a year.

The clean streams program involves a great many problems of reason and law that must be solved by the Dept. of Health and the Sanitary Water Board. One basic question, as stated by Technical Advisor Knox, "How pure should a river be? Should the same waste disposal regulations be applied to a small waste producer on a major waterway as to a larger waste producer on a small waterway?"

The recovery of or neutralization of industrial wastes is as yet in its experimental stages so far as waste products of several types are concerned. The problem of the paper industry is one of the most difficult to solve. Its sulfite waste water is obnoxious to the highest degree. herefore the Sanitary Water Board has employed a firm of engineering consultants to seek the answers to the industry's problem.

So as to learn more about the mechanism by which bacteria and marine life have a self-purifying effect on rivers and streams, the board has also begun a biological stream survey under a contract

(CONTINUED ON PAGE 142)

MACHINE TOOLS

. . . News and Market Activities

First Half Business Reported Up; But Summer Slump Impending

• • • **Contrary to the** dire predictions of its fondest critics, the machine tool industry did more business in the first half of 1948 than it did in the corresponding period of 1947, both in units and dollar volume.

While June figures are not yet available, a 5 month's comparison recalls that machine tool sales totaled about $93 million in the first five months of 1947, compared with about $106 million in the same period of 1948.

An important feature in 1948 business to date has been fewer cancellations compared with 1947. Taking the cancellations into account, machine tool sales in the first 5 months of 1947 aggregate about $82 million compared with an aggregate of $102 million for the corresponding period of 1948, representing an increase of about 20 pct.

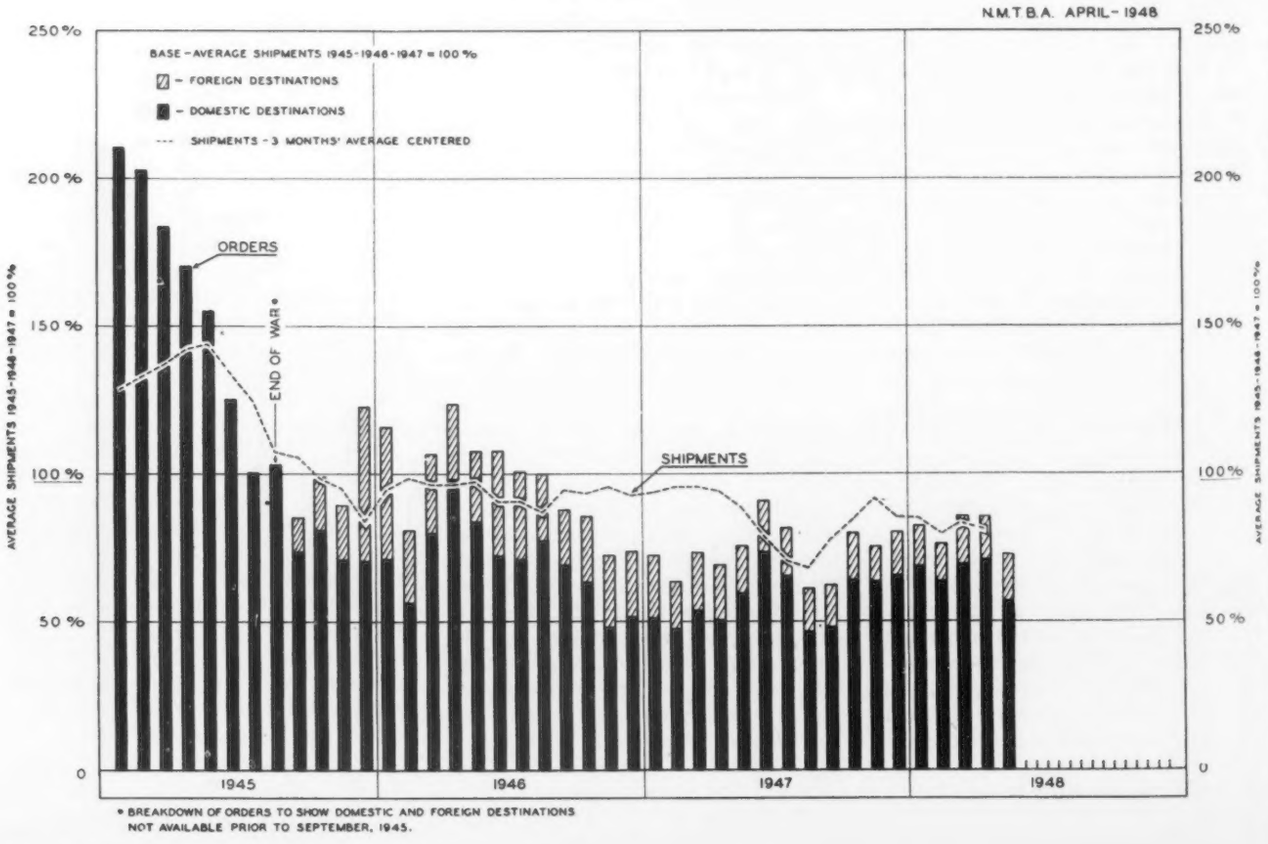
Preliminary reports indicate that June sales will top May, raising the percentage increases for the half ended over the first half of 1947 to more than 20 pct. Some segments of the industry, where sales figures are complete, have reported a 30 pct increase over the same period last year, but this is the exception rather than the rule.

Encouraging as the industry's first half performance appears to most observers, there is considerable evidence that the summer slump is at hand, and at the same time, some segments of the industry are apparently feeling a great deal of pressure from the used machinery field. The wage-price spiral has had and will continue to have a dynamic effect on machine tool manufacturing costs, particularly in raw materials. Machine tool users or customers are in the same position, and accordingly are giving consideration to used machines. As costs continue to rise, more of this can be expected, according to trade sources.

The pickup in business this fall, that some of the major segments of the industry are counting on, stems from the three very familiar sources, defense programs, ECA and the automobile industry.

By and large, the industry is pretty well dependent on the defense program, which, according to those close to the horse's mouth, will be very big. But those who are not so close doubt that it will mean very much, a few machines here and there, and not much more.

INDEX OF NEW ORDERS AND SHIPMENTS OF MACHINE TOOLS



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MARVEL High-Speed-Edge Blades assure Faster, more Accurate cutting with proven Economy and complete Safety. Only the MARVEL is a composite blade with a genuine 18% Tungsten high speed steel cutting edge electrically welded to an exceptionally tough, strong alloy steel body.

The High-Speed-Edge does the cutting while the alloy back, with hardened eyes, carries the load. Blade tensions up to 300% higher than those possible with ordinary blades are recommended. This greater tension is confined to the cutting or leading edge by the location of pin holes (exclusive MARVEL design feature) and cannot be overcome by work resistance. Heavier feeds and greater speeds are practical without "run out."

With greater accuracy, higher production and lower cost per cut, comes the extra dividend of Safety, for MARVEL High-Speed-Edge Hack Saw Blades are Positively Unbreakable — *they will not shatter.*

Ask your local MARVEL distributor (see classified phone book) to help you modernize your metal sawing with MARVEL High-Speed-Edge Blades. They cost no more than ordinary high speed steel blades.

1. Genuine 18% Tungsten High-Speed-Steel cutting edge.

2. Tough unbreakable alloy steel body with hardened eyes.

1&2. Integrally welded to make a fast-cutting, long lasting composite blade that is *positively unbreakable.*

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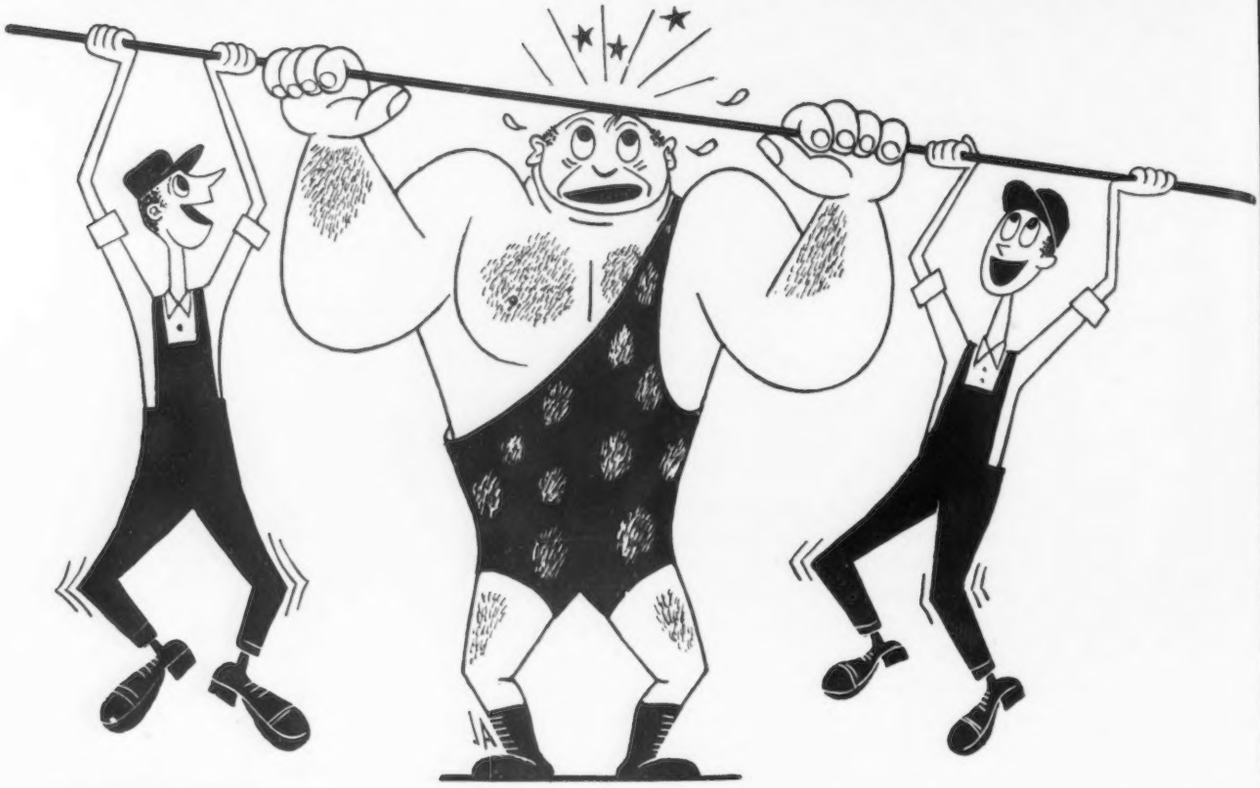

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TWIN CITY	2545 University Ave., St. Paul (4), Minn.	NEstor 7311

UNITED STATES STEEL

Chicago District Shows Formula Break

New York

• • • **The first major** upward price movement on openhearth material in months has occurred in the Chicago district. No. 1 heavy melting steel is quoted there this week at $39.50 to $40.50 a ton. This is up an average of 75¢ over last week when the range was $39.00 to $39.50.

Observers had been expecting a breakthrough for some time, as mills on the fringe have been paying the price for some months. Shipments increased in the last 2 weeks to the point that the Chicago mills were forced to go along. Carnegie-Illinois Steel Co. insists that they are buying at $39.50 and for that reason that quotation holds at the bottom of the price range.

Other districts are straining at the bit as shipments continue to be painfully slow. In the Cleveland and Valley districts especially, demand is very strong with no additional material coming forth. If any major consumer stepped out to get all the material he wanted, some observers in those areas believe the entire market might have to abandon the badly bent formula prices.

The mills expressed their position strongly in last week's announcement regarding German scrap. The tonnages involved are by no means the answer to the present difficulties, but might provide a little backlog to work on.

The quality of scrap being shipped has been below grade for some time and the situation is apparently getting even worse. Part of it can be attributed to general upgrading practices due to the stretch of the market. Dealers and brokers point out that the higher quality scrap is returned directly to the mills and dealers, under pressure for deliveries, are forced to make use of every source of metallics available.

•

PITTSBURGH — Price activity during the past week was limited to a 50¢ advance in low phosphorus scrap. Openhearth material has held at the formula price for so many months that some have assumed it would become immovable. But with other prices rising some dealers are trying to push it up. Late last week, however, brokers were filling openhearth orders at the usual price. Foundry vacations have meant some reshuffling of cast shipments but demand still tops supply by a big margin and prices hold firm. Overgrading continues rife in almost all categories.

•

CHICAGO—The $39.50 formula price is now definitely a floor price. Brokers and dealers cannot buy for less themselves. Most of them have been forced to pay higher prices to cover the old orders. This has gone on for months, but in the last 2 weeks such tonnages have greatly increased. Free market, openhearth scrap is now being bought by some mills for at least $1.00 more than formula. The camouflaging of ordinary openhearth scrap is still being practiced in cases. Some observers report the new price was first established by mills outside the immediate area, which made it imperative for the local mills to meet the new figure. This week's price realistically reflects the true market. It is not yet clear whether the earmarked scrap will be adjusted. Dealers in Indiana report they understand the new price covers free market scrap only and that the mills will stick to formula on earmarked shipments. The widespread closing of many fabricating plants for July vacations will decrease the volume of earmarked tonnages. Other items which usually fluctuate with No. 1 heavy melting are not as consistently strong as the first five items on the list, and as yet have not changed. One fair-sized transaction on No. 1 bundles was bought by a local mill last week for $43.50 delivered.

•

PHILADELPHIA—The market is very strong in this district but there were no changes in price last week. Industrial scrap producers closed down for the holiday week and many will not reopen until July 19. And there is practically no over-the-scale trade. It is understood that scrap shipments are moving in fair volume but mills have been unable to build their stocks. Market factors are awaiting the outcome of the Portsmouth Navy Yard sale of 2000 tons to find out whether there would be an early crack in formula prices. Jobbing foundries in the area are unable to obtain any pig iron due to the relining of Alan Wood's small furnace. Nevertheless cast grades are still on the firm side.

•

CLEVELAND—Demand is strong, supply weak. Shipments of all grades, particularly openhearth have fallen off and major consumers here and in the Valley are scrambling for material and doing well to get shipments equivalent to their consumption. Scrap yards are pretty well cleaned up and the formula appears to be in jeopardy, with a move by any one of the major mills all that is necessary to blow the market higher than a kite. Foundry grades are firm, but consumers of mixed cast are demanding better segregation. Plant vacations scheduled for the next 2 weeks will likely have a pronounced effect on the movement of scrap, which is already at a low ebb.

•

DETROIT—With the exception of cast grades which continue to show signs of weakness all scrap grades are strong in Detroit this week. Reports of transactions at over-the-formula prices continue to be a topic of much conversation here although local mills are continuing to buy at formula levels it is reported. The continuation of the tool and die strike into its third week has contributed to the weakness of cast according to informed scrap sources.

•

BUFFALO—Increasing signs of another stalemate in the making between big mills and dealers over prices were in evidence last week. With shipments to yards slow and further covering reported above the formula, nobody was inclined to sell short. Neither was there any holding back of scrap on the part of local yards. No. 1 heavy melting was in good demand at $44 to $45 by specialty users, with none going to the leading formula consumers except on allocation. Resumption of operations this week by Worthington Pump, where a 6-week strike was settled, served to offset the effect of vacation shutdowns by other foundries on the cast scrap market. One of the local mills received 5000 tons by canal, the first water shipment of the season from New York.

•

BIRMINGHAM—Although foundry and pipe shop operations in this area have been reduced by temperorary close-downs for summer vacations there has been no substantial drop in demand for cast grades of scrap. Mills are reported taking all the steel available.

•

NEW YORK—The market was static pricewise and business is still generally slowed to a crawl. The outlook for July and August, according to most observers, does not indicate any upswing. Skepticism as to the likelihood of German scrap coming over was expressed in most quarters—largely on the basis of past performance. But the mills are more determined than ever before and apparently are hoping for and pressing for more effective government assistance.

•

CINCINNATI—Formula prices still prevail, although shipments have fallen off and demand is strong. Plant vacations have been under way in this area for 3 weeks, which has had its effect on both consumption and production of material. Openhearth consumers have 4 to 6 weeks supply on the ground, but are anxious to increase inventory. While all signs point to a higher market, there has been no move in that direction as yet.

•

BOSTON—There is little change in the market here. Openhearth grades continue at formula in price. Though the undertone of the cast market is weak and highly uncertain, there is no late price change. Some plants report good activity in the face of a vacation season.

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$40.00 to $40.50
RR. hvy. melting	41.00 to 41.50
No. 2 hvy. melting	40.00 to 40.50
RR. scrap rails	55.50 to 56.50
Rails 2 ft and under	62.50 to 63.50
No. 1 comp'd bundles	40.00 to 40.50
Hand bdld. new shts.	40.00 to 40.50
Hvy. axle turn.	41.50 to 42.00
Hvy. steel forge turn.	41.50 to 42.00
Mach. shop turn.	35.50 to 36.00
Shoveling turn.	38.00 to 38.50
Mixed bor. and turn.	35.50 to 36.00
Cast iron boring	38.00 to 38.50
No. 1 cupola cast	63.00 to 64.50
Hvy. breakable cast	52.00 to 53.00
Malleable	76.00 to 77.00
RR. knuck, and coup.	55.50 to 56.50
RR. coil springs	55.50 to 56.50
R.R. leaf springs	55.50 to 56.50
Rooled steel wheels	55.50 to 56.50
Low phos.	48.50 to 49.00

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.50 to $40.50
No. 2 hvy. melting	39.50 to 40.50
No. 1 bundles	39.50 to 40.50
No. 2 dealers' bundles	39.50 to 40.50
Bundled mach. shop turn.	39.50 to 40.50
Galv. bundles	35.00 to 35.50
Mach. shop turn.	34.00 to 34.50
Short shov. turn.	35.50 to 36.50
Cast iron borings	36.00 to 37.00
Mix. borings & turn.	34.00 to 34.50
Low phos. hvy, forge	48.00 to 50.00
Low phos. plates	45.00 to 46.00
No. 1 RR. hvy. melt	41.25 to 41.75
Rerolling rails	56.00 to 57.50
Miscellaneous rails	53.50 to 54.00
Angles & splice bars	55.00 to 56.00
Locomotive tires, cut	53.00 to 55.00
Cut bolster & side frames	48.00 to 49.00
Standard stl. car axles	62.00 to 64.00
No. 3 steel wheels	52.50 to 53.50
Couplers & knuckles	53.50 to 54.00
Rails, 2 ft and under	57.00 to 58.50
Malleable	77.00 to 78.00
No. 1 mach. cast	69.00 to 71.00
No. 1 agricul. cast	62.00 to 64.00
Heavy breakable cast	58.00 to 64.00
RR. grate bars	65.00 to 66.00
Cast iron brake shoes	57.00 to 58.00
Cast iron carwheels	61.00 to 62.00

CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	$33.50 to $39.50
No. 2 hvy. melting	38.50 to 39.50
No. 1 bundles	38.50 to 39.50
No. 2 bundles	38.50 to 39.50
Mach. shop turn.	33.00 to 33.50
Shoveling turn.	35.00 to 35.50
Cast iron borings	32.50 to 33.00
Mixed bor. & turn.	32.50 to 33.00
Low phos., plate	46.00 to 48.00
No. 1 cupola cast	63.00 to 64.00
Hvy. breakable cast	55.00 to 56.00
Rails 18 in. & under	60.00 to 61.00
Rails random length	51.00 to 52.00
Drop broken	67.00 to 69.00

BOSTON

Dealers' buying prices, per gross ton, f.o.b. Boston

No. 1 hvy. melting	$31.65 to $31.90
No. 2 hvy. melting	31.65 to 31.90
Nos. 1 and 2 bundles	31.65 to 31.90
Busheling	31.65 to 31.90
Shoveling turn.	.... 28.90
Machine shop trun.	.... 26.90
Mixed bor. & turn.	.... 26.90
Cl'n cast chem. bor.	36.00 to 37.00
No. 1 machinery cast	55.00 to 57.00
No. 2 machinery cast	54.00 to 56.00
Heavy breakable cast	53.00 to 53.50
Stove plate	51.50 to 52.00

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	.... $35.50
No. 2 hvy. melting	.... 35.50
No. 1 bundles	.... 35.50
New busheling	.... 35.50
Flashings	.... 35.50
Mach. shop turn.	$29.00 to 29.50
Shoveling turn.	30.00 to 30.50
Cast iron borings	30.00 to 30.50
Mixed bor. & turn.	28.50 to 29.00
Low phos. plate	39.50 to 40.50
No. 1 cupola cast	52.00 to 55.00
Heavy breakable cast	45.00 to 50.00
Stove plate	48.00 to 50.00
Automotive cast	52.00 to 55.00

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to $43.00
No. 2 hvy. melting	38.50 to 39.00
No. 1 bundles	42.00 to 43.00
No. 2 bundles	38.50 to 39.00
Mach. shop turn.	34.50 to 35.00
Shoveling turn.	34.50 to 35.00
Mixed bor & turn	34.50 to 35.00
Clean cast chemical bor.	42.00 to 44.00
No. 1 machinery cast	66.00 to 68.00
No. 1 mixed yard cast	62.00 to 63.00
Hvy. breakable cast.	63.00 to 64.00
Clean auto cast.	65.00 to 66.00
Hvy. axle forge turn.	44.00 to 45.00
Low phos. plate	48.00 to 49.00
Low phos. punchings	48.00 to 49.00
Low phos. bundles	46.00 to 47.00
RR. steel wheels	52.00 to 53.00
RR. coil springs	52.00 to 53.00
RR. malleable	75.00 to 78.00
Cast iron carwheels	68.00 to 70.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	37.50 to 38.50
Bundled sheets	37.50 to 38.50
Mach. shop turn.	33.00 to 33.50
Locomotive tires, uncut	47.00 to 48.00
Mis. std. sec. rails	49.00 to 50.00
Steel angle cars	48.50 to 49.50
Rails 3 ft and under	53.00 to 55.00
RR. steel springs	49.00 to 50.00
Steel car axles	54.00 to 55.00
Grate bars	59.00 to 60.00
Brake shoes	57.00 to 58.00
Malleable	72.00 to 73.00
Cast iron car wheels	61.00 to 62.00
No. 1 machinery cast	65.00 to 67.00
Hvy. breakable cast	59.00 to 60.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy, melting	.... $37.50
No. 2 hvy, melting	.... 37.50
No. 2 bundles	.... 37.50
No. 1 busheling	.... 37.50
Long turnings	$25.00 to 26.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Bar crops and plate	42.50 to 43.50
Structural and plate	42.50 to 43.50
No. 1 cupola cast.	64.00 to 67.00
Stove plate	63.00 to 64.00
No. 1 RR. hvy, melt.	.... 38.50
Steel axles	51.00 to 52.00
Scrap rails	44.00 to 45.00
Rerolling rails	51.00 to 53.00
Angles & splice bars	51.00 to 53.00
Rails 3 ft & under	52.00 to 55.00
Cast iron carwheels	50.00 to 55.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$40.00 to $40.50
No. 2 hvy. melting	40.00 to 40.50
Mach. shop turn.	35.00 to 35.50
Short shov. turn.	37.00 to 37.50
Cast iron borings	36.00 to 36.50
Low phos.	45.00 to 45.50

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$36.50 to $37.50
No. 2 hvy. melting	.... 34.50
No. 2 bundles	.... 34.50
Mach. shop turn.	29.00 to 29.50
Mixed bor. & turn.	29.00 to 29.50
Shoveling turn.	31.00 to 32.00
No. 1 cupola cast	55.50 to 56.50
Clean auto cast	55.50 to 56.50
Hvy. breakable cast	55.00 to 56.00
Charging box cast	55.00 to 56.00
Unstrp. motor blks.	52.00 to 53.00
Cl'n cast chem. bor.	34.50 to 35.50

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy, melting	$39.75 to $40.00
No. 2 hvy. melting	.... 39.75
No. 1 bundles	.... 39.75
No. 2 bundles	.... 39.75
No. 1 busheling	.... 39.75
Mach. shop turn.	34.75 to 35.50
Shoveling turn.	35.00 to 36.50
Cast iron borings	.... 35.75
Mixed bor. & turn.	.... 34.75
No. 1 cupola cast	64.00 to 65.00
Mixed cupola cast	60.00 to 61.00
Charging box cast	56.00 to 57.00
Stove plate	60.00 to 61.00
Stove auto cast	60.00 to 61.00
RR. malleable	70.00 to 75.00
Small indl. malleable	47.00 to 49.00
Low phos. plate	44.75 to 46.00
Scrap rails	50.00 to 52.00
Rails 3 ft & under	57.00 to 58.00
RR steel wheels	51.00 to 52.00
Cast iron carwheels	51.00 to 52.00
RR coil & leaf spgs.	51.00 to 52.00
RR. knuckles & coup.	51.00 to 52.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$39.50 to $40.00
No. 2 hvy. melting	39.50 to 40.00
No. 1 bundles	39.50 to 40.00
No. 1 busheling	39.50 to 40.00
Drop forge flashings	39.50 to 40.00
Mach. shop turn.	34.50 to 35.00
Shoveling turn.	35.50 to 36.00
Steel axle turn.	39.50 to 40.00
Cast iron borings	35.50 to 36.00
Mixed bor. & turn.	35.50 to 36.00
Low phos.	44.50 to 45.00
No. 1 machinery cast	73.00 to 74.00
Malleable	74.00 to 76.00
RR. cast.	73.00 to 74.00
Railroad grate bars	60.00 to 62.00
Stove plate	61.00 to 63.00
RR. hvy. melting	40.00 to 40.50
Rails 3 ft & under	60.00 to 61.00
Rails 18 in. & under	62.00 to 63.00

SAN FRANCISCO

Per gross ton f.o.b. shipping point:

No. 1 hvy. melting	.... $25.00
No. 2 hvy. melting	.... 25.00
No. 2 bales	.... 25.00

Per gross ton delivered to consumer:

No. 3 bales	.... $19.50
Mach. shop turn.	.... 16.00
Elec. furn. 1 ft under	$32.00 to 34.00
No. 1 cupola cast	40.00 to 43.00
RR. hvy. melting	.... 26.00

LOS ANGELES

Per gross ton f.o.b. shipping point:

No. 1 hvy. melting	.... $25.00
No. 2 hvy. melting	.... 25.00
No. 1 bales	.... 25.00
No. 2 bales	.... 25.00
No. 3 bales	.... 19.00
Mach. shop turn.	.... 17.50
No. 1 cupola cast.	$45.00 to 50.00
RR. hvy. melting	.... 26.00

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy. melt.	.... $26.00
Elec. furn. 1 ft and under	.... 30.00
No. 1 cupola cast	.... 40.00
RR. hvy. melting	.... 28.00

HAMILTON, ONT

Per gross ton delivered to consumer: Cast grades f.o.b. shipping point.

Heavy melting	$22.00*
No. 1 bundles	22.00*
No. 2 bundles	21.50*
Mechanical bundles	20.00*
Mixed steel scrap	19.00*
Mixed borings and turnings	17.00*
Rails, remelting	23.00*
Rails, rerolling	26.00*
Bushelings	17.00*
Bushelings, new fact, prep'd	21.00*
Bushelings, new fact, unprep'd	16.00*
Short steel turnings	17.00*
No. 1 cast	$42.00 to 46.00
No. 2 cast	35.00 to 37.00

*Ceiling Price.

NONFERROUS METALS

. . . News and Market Activities

Fabricators Will Feel Price Increases in Aluminum and Brass

New York

• • • **News of wage agreements** and price increases in aluminum and brass mill products fell like a blow on metal fabricators last week. The brass price increases had been anticipated for many weeks by consumers, but the sharp increases in aluminum products came as a surprise to most buyers. But consumers are generally fearful that brass mill prices may require further adjustment due to impending increases in other metals, principally zinc and lead.

The increases in representative aluminum products made by the Aluminum Co. of America effective June 28 are shown on page 135. As yet no information is available on new prices for extruded shapes, rod and bars. The price information released to date indicates increases ranging form 1¢ to a fraction more than 4¢ per lb. These increases are higher than originally planned by Alcoa on the basis of an approaching agreement with CIO leaders at a lower wage increase than that finally forced through. It is understood that top CIO management took a leading part in the final negotiations to force up the wage figure in order to use it as a pattern for prospective reopening of the steel wage negotiations. Alcoa had already prepared and published its price schedules involving lower increases when agreement seemed to be approaching at the lower wage figure.

At present there is a price spread in aluminum products which may continue for some time. Neither Reynolds nor Permanente top managements have decided yet whether it would be wise for them to follow Alcoa's price lead. Both companies concluded negotiations with their unions some time ago at lower wage rates and believe that if prices are increased they may face more wage demands.

The 1¢ increase in ingot and pig aluminum is considered unimportant by foundry consumers who have been existing almost wholly on a slowly disappearing tonnage of secondary ingot. This increase was belittled by the jump of 2¢ to 3¢ per lb in secondary grades last week, bringing some grades up to a top price of 26¢, 10¢ higher than virgin ingot.

Revere Copper & Brass, Inc. has announced a new price schedule for aluminum extruded shapes, rods and bars effective July 1. Base prices have increased to cover current costs on all shapes weighing ½ lb and more per ft. For lighter shapes, they have established a table of weight per foot extras in order to compensate for the shortcomings of the form factor method of pricing. This development is along the lines of the extrusion pricing methods already announced by Reynolds Metals Co. for aluminum and Dow Chemical Co. for magnesium. The fact that Alcoa has not yet prepared its new prices for extruded shapes has caused some observers to wonder whether it too will modernize its extrusion pricing method.

The American Brass Co. has published its new mill products prices effective June 28. These prices are shown on page 135. Chase Brass & Copper Co. has also announced new prices effective the same date. The new schedule of Revere Copper & Brass is effective July 2. It is understood that the price schedules of the three producers are approximately the same. They involve increases of 1¼¢ per lb for brass products, 1½¢ for sheet copper and lower wage rates and believe that 1½¢ for all types of tubing. The increases in phosphor bronze products take into consideration the 9¢ per lb tin increase of last month.

Brass mill products extras have also been revised. Discounts from extras have been decreased by about 10 pct. There is no change in the order quantity schedule for larger quantities. Extras have been increased on order quantities of 300 lb or less.

Indications are growing of the possibility of further price increases in some metals. Zinc is in the most critical position at the moment. Consumers of all grades of zinc are having difficulty in obtaining their requirements. The Metals Reserve stockpile has now been frozen as the result of the pressure being applied by the Munitions Board.

Export sales of foreign zinc were inactive during the week due to the feeling in the trade that a price increase was imminent, but previous sales were reported at 13¢, Gulf Ports. The key to the metal's price position is to be found in developments in the Tri-State District where ore producers are dissatisfied with the current $78 a ton concentrates price. The only metal now moving at this price is on a contract basis as operators are holding back tonnage for an increase. Estimates of a probable new price range from $91 to $100, which would serve to raise the domestic zinc price by 2¢ to 2½¢ per lb.

The lead market continues in short supply despite the reduction in replacement battery production in May to 1 million units as compared with a peak production figure of 2.6 million. The tonnage of lead freed by this development has been absorbed by the recent Mexican mine and smelter strikes and the unsatisfied requirements of other industries. High premiums above the domestic market are being paid for secondary lead, but the tip-off on a domestic price increase will come with news of the sale of foreign lead at premiums.

Nonferrous Metals Prices

	June 30	July 1	July 2	July 3	July 6
Copper, electro, Conn.	21.50	21.50	21.50	21.50	21.50
Copper, Lake, Conn.	21.625	21.625	21.625	21.625	21.625
Tin, Straits, New York	$1.03	$1.03	$1.03	$1.03	$1.03
Zinc, East St. Louis	12.00	12.00	12.00	12.00	12.00
Lead, St. Louis	17.30	17.30	17.30	17.30	17.30

Primary Metals

(Cents per lb. unless otherwise noted)

Aluminum, 99+%, 10,000 lb, f.o.b. shipping point, freight allowed	16.00
Aluminum pig, f.o.b. shipping point	15.00
Antimony, American, Laredo, Tex.	35.00
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$20.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$40.00
Cadmium, del'd	$1.75
Cobalt, 97-99% (per lb)	$1.65 to $1.72
Copper electro, Conn. Valley	21.50
Copper, lake, Conn. Valley	21.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$110 to $120
Lead, St. Louis	17.30
Lead, New York	17.50
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$75 to $77
Nickel, electro, f.o.b. New York	36.56
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$88 to $91
Silver, New York, cents per oz.	74.625
Tin, Grade A, New York	$1.03
Zinc, East St. Louis	12.00
Zinc, New York	12.65
Zirconium copper, 20 pct Zr, per lb contained Zr.	$8.75

Remelted Metals

Brass Ingot

(Cents per lb, in carloads)

85-5-5-5 ingot	
No. 115	19.50–20.00
No. 120	19.00–19.50
No. 123	18.50–19.00
80-10-10 ingot	
No. 305	25.25
No. 315	22.25
88-10-2 ingot	
No. 210	31.00
No. 215	29.00
No. 245	23.25–23.75
Yellow ingot	
No. 405	15.25–16.00
Manganese bronze	
No. 421	19.00

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	25.00–26.00
0.60 copper, max.	25.00–25.50
Piston alloys (No. 122 type)	22.50–23.25
No. 12 alum. (No. 2 grade)	23.50–23.75
108 alloy	23.50–23.75
195 alloy	22.50–23.00
13 alloy	25.00–26.00
AXS-679	20.75
Steel deoxidizing aluminum, notch-bar granulated or shot	
Grade 1—95 pct.-95½ pct.	23.25–23.75
Grade 2—92 pct-95 pct.	22.50–23.00
Grade 3—90 pct-92 pct.	22.25–22.75
Grade 4—85 pct-90 pct.	22.00–22.50

Electroplating Supplies

Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	37⅝
Electrodeposited	32⅝
Rolled, oval, straight, delivered	34.34
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer	33⅜
Zinc, cast, 99.99	20.50
Nickel 99 pct plus, frt. allowed	
Cast	51
Rolled, depolarized	52
Silver 999 fine	
Rolled, 100 oz lots per troy oz.	67¼

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	44.00
Copper sulfate, 99.5, crystals, bbls.	12.50
Nickel salts, single, 425 lb bbls. frt. allowed	15.50
Silver cyanide, 100 oz. lots, per oz.	54.00
Sodium cyanide, 96 pct domestic, 100 lb drums	15.00
Zinc cyanide, 100 lb drums	35.00
Zinc sulfate, 89 pct, granules, bbls, frt. allowed	7.90

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb., f.o.b. shipping point, freight allowed.)

Flat Sheet: 0.188 in., 2S, 3S, 25.7¢; 4S, 61S-O, 27.8¢; 52S, 29.9¢; 24S-O, 24S-OAL, 28.8¢; 75S-O, 75S-OAL, 35.3¢. 0.081 in., 2S, 3S, 26.8¢; 4S, 61S-O, 29.2¢; 52S, 31.3¢; 24S-O, 24S-OAL, 29.9¢; 75S-O, 75S-OAL, 37.0¢. 0.032 in., 2S, 3S, 28.5¢; 4S, 61S-O, 32.5¢; 52S, 35.2¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 46.6¢.

Plate: ¼ in. and heavier: 2S, 3S, 22.8¢; 4S-F, 25.0¢; 52S, 26.1¢; 61S-O, 25.6¢; 24S-F, 24S-FAL, 26.1¢; 75S, 75S-AL, 32.9¢.

Extruded Solid Shapes: Shape factors 1 to 4; 31¢ to 59¢; 11 to 13, 31.9¢ to 69¢; 23 to 25, 33.4c to 90¢; 35 to 37, 40.8¢ to $1.25; 47 to 49, 58.7¢ to $1.84.

Extruded Round Rod, Square, Hex, Octagonal Bar: ¼ in. and over, 27¢ to 38¢; ½ to ¾ in., 28¢ to 40.5¢; ⅜ to ½ in., 29c to 43c; ¼ to ⅜ in., 30¢ to 46.5¢; ⅞ to 1⅜ in., 32.5¢ to 53.5¢; 9/64 to ⅜ in., 35.5¢ to 62¢.

Rolled Rod: 1.064 to 4.5 in., 2S, 3S, 33¢ to 29.5¢; Cold-finished rod, 0.375 to 3.5 in., 2S, 3S, 35.5¢ to 31¢.

Screw Machine Stock: Drawn, ⅛ to 1¼ in., 11S-T3, R317-T4, 48¢ to 34¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 34.5¢; ⅝ to 2 in., R317-T4, 33¢ to 30¢; rolled, 1⅞ to 3 in., 11S-T3, 34.5¢ to 31.5¢; 2⅛ to 3⅝ in., R317-T4, 29.5¢ to 28.5¢. Base 5000 lb.

Drawn Wire: coiled, 0.051 to 0.374 in.; 2S, 35¢ to 25.5¢; 52S, 43c to 31c; 56S, 45.5c to 37¢; 17S-T4, 49¢ to 33.5¢; 61S-T4, 43.5c to 33c.; 75S-T6, 75¢ to 54¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed. Base quantity 30,000 lb.)

Sheet and Plate: Ma. FSa. ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58c-60c; 10, 59c-61c; 12, 63-65c; 14, 69c-74c; 16, 76c-81c; 18, 84c-89c 20, 96c-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex, Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢ 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft. for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam. in., 0.049 to 0.057, ¼ to ⅞ $1.14; ⅞ to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢. 0.065 to 0.082, ¾ to ⅞, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	54	43
No. 35 sheets		41
Strip, cold-rolled	60	44
Rod		
Hot-rolled	50	39
Cold-drawn	55	44
Angles, hot-rolled	50	39
Plates	52	41
Seamless tubes	83	71
Shot and blocks		31

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Extruded Shapes	Rods	Sheets
Copper	34.78	....	35.18
Copper, hot-rolled	....	31.28	....
Copper, drawn	....	32.28	....
Low brass	35.86*	32.64	32.95
Yellow brass	34.42*	31.10	31.41
Red brass	36.39*	33.17	33.48
Naval brass	31.53	30.28	36.22
Leaded brass	29.89	25.94	....
Commercial bronze	37.18*	34.21	34.52
Manganese bronze	35.12	33.62	39.72
Phosphor bronze, 5 pct	55.90*	54.40	54.15
Muntz metal	31.05	29.80	34.24
Everdur, Herculoy, Olympic, etc.	....	38.75	39.81
Nickel silver, 10 pct	....	43.68	41.54
Architectural bronze	29.89	....	....

*Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add 1¢ per lb for shipments of 15,000 lb or more.)

	Heavy	Turnings
Copper	19⅛	18⅜
Yellow brass	15⅝	14¾
Red brass	17½	16¾
Commercial bronze	17⅝	16⅞
Manganese bronze	15¼	14⅜
Leaded brass rod ends	15⅜	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery.)

No. 1 copper, wire	18.50
No. 2 copper, wire	17.50
Light copper	16.50
Refinery brass	16.50–16.75*

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer.)

No. 1 copper, wire	18.50
No. 2 copper, wire	17.50
Light copper	16.50
No. 2 composition	14.50
No. 1 comp. turnings	14.00
Rolled brass	11.00
Brass pipe	11.25
Radiators	12.00
Heavy yellow brass	10.50
Aluminum	
Mixed old cast	11.50
Mixed old clips	11.50
Mixed turnings, dry	11.00
Pots & pans	12.00
Low copper	12.50

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound.)

Copper and Brass

No. 1 heavy copper and wire	16¾—17¼
No. 2 heavy copper and wire	15¾—16¼
Light copper	14½—15
Auto radiators (unsweated)	10 —10½
No. 1 composition	13 —13½
No. 1 composition turnings	12½—13
Clean red car boxes	10 —10¼
Cocks and faucets	10 —10½
Mixed heavy yellow brass	8½— 9
Old rolled brass	10 —10¼
Brass pipe	10½—10¾
New soft brass clippings	12½—13
Brass rod ends	10¼—10¾
No. 1 brass rod turnings	9¾—10¼

Aluminum

Alum, pistons and struts	7½— 8
Aluminum crankcases	10 —10½
2S aluminum clippings	11½—12
Old sheet & utensils	10 —10½
Dry borings and turnings	4½— 5
Misc. cast aluminum	10 —10½
Dural clips (24S)	10 —10½

Zinc

New zinc clippings	8 — 8½
Old zinc	6 — 6½
Zinc routings	3 — 3½
Old die cast scrap	1 — 4½

Nickel and Monel

Pure nickel clippings	17 —18
Clean nickel turnings	13 —14
Nickel anodes	17 —18
Nickel rod ends	17 —18
New Monel clippings	12 —13
Clean Monel turnings	8 — 9
Old sheet Monel	10 —10½
Old Monel castings	7½— 8
Inconel clippings	9 —10
Nickel silver clippings, mixed	8 — 8½
Nickel silver turnings, mixed	6½— 7

Lead

Soft scrap lead	15½—16
Battery plates (dry)	10 —10¼

Magnesium Alloys

Segregated solids	8 — 9
Castings	4½— 5½

Miscellaneous

Block tin	81 —82
No. 1 pewter	65 —67
No. 1 auto babbitt	50 —52
Mixed common babbitt	14¼—14⅜
Solder joints	19 —19½
Siphon tops	50 —52
Small foundry type	17½—18
Monotype	16¼—16⅜
Lino. and stereotype	15½—16
Electrotype	13½—14
New type shell cuttings	14½—15
Hand picked type shells	6½— 7
Lino and stereo dross	8 — 8½
Electro dross	6 — 6½

Comparison of Prices . .

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

Steel prices on this page are the average of various f.o.b. quotations of major basing points: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	July 6, 1948	June 29, 1948	June 8, 1948	July 8, 1947
Hot-rolled sheets	2.775	2.775	2.775	2.50
Cold-rolled sheets	3.495	3.495	3.495	3.20
Galvanized sheets (10 ga.)	3.913	3.913	3.913	3.55
Hot-rolled strip	2.775	2.775	2.775	2.50
Cold-rolled strip	3.535	3.535	3.535	3.20
Plates	2.93	2.93	2.93	2.65
Plates wrought iron	7.25	7.25	7.25	5.95
Stain's c-r strip (No. 302)	30.50	30.50	30.50	30.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes..	$6.70	$6.70	$6.70	$5.75
Tinplate, electro (0.50 lb)	5.90	5.90	5.90	5.05
Special coated mfg. ternes	5.80	5.80	5.80	4.90
Bars and Shapes: (cents per pound)				
Merchant bars	2.875	2.875	2.875	2.60
Cold-finished bars	3.483	3.483	3.483	3.20
Alloy bars	3.213	3.213	3.213	3.05
Structural shapes	2.767	2.767	2.767	2.50
Stainless bars (No. 302)	26.00	26.00	26.00	26.00
Wrought iron bars	8.65	8.65	8.65	6.15
Wire: (cents per pound)				
Bright wire	3.608	3.608	3.608	3.30
Rails: (dollars per 100 lb)				
Heavy rails	$2.725	$2.725	$2.725	$2.50
Light rails	3.05	3.05	3.05	2.85
Semifinished Steel: (dollars per gross ton)				
Rerolling billets	$45.00†	$45.00†	$45.00†	$42.00
Slabs, rerolling	45.00†	45.00†	45.00†	42.00
Forging billets	54.00†	54.00†	54.00†	50.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	61.00
Wire Rods and Skelp: (cents per pound)				
Wire rods	3.133	3.133	3.133	2.55
Skelp	2.888	2.888	2.888	2.35

† Net ton

Pig Iron: (per gross ton)	July 6, 1948	June 29, 1948	June 8, 1948	July 8, 1947
No. 2, foundry, Phila.	$44.85	$44.85	$44.85	$38.22
No. 2, Valley furnace	39.50	39.50	39.50	33.50
No. 2, Southern Cin'ti	45.47	45.47	45.47	34.75
No. 2, Birmingham	39.38	39.38	39.38	29.88
No. 2, foundry, Chicago†	39.00	39.00	39.00	33.00
Basic del'd Philadelphia	44.35	44.35	44.35	37.22
Basic, Valley furnace	39.00	39.00	39.00	33.00
Malleable, Chicago†	39.50	39.50	39.50	33.50
Malleable, Valley	39.50	39.50	39.50	33.50
Charcoal, Chicago	65.55	65.55	65.55	45.99
Ferromanganese‡	145.00	145.00	145.00	135.00

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡ For carlots at seaboard.
• Revised.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$40.25	$40.25	$40.25	$35.75
Heavy mlt'g steel, Phila.	42.50	42.50	42.50	37.25
Heavy melt'g steel, Ch'go	40.00	39.25	39.25	33.75
No. 1, hy, comp. sh't, Det.	35.50	35.50	35.50	33.25
Low phos. Young'n	45.25	45.25	45.25	38.75
No. 1, cast, Pittsburgh	63.75	63.75	63.75	36.50
No. 1, cast, Philadelphia	67.00	67.00	67.00	46.50
No. 1, cast, Chicago	70.00	69.50	69.50	45.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$13.50	$12.75	$12.75	$10.50
Foundry coke, prompt	16.50	16.50	16.50	11.25
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	21.50	21.50	21.50	21.50
Copper, Lake Conn.	21.625	21.625	21.625	21.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	80.00
Zinc, East St. Louis	12.00	12.00	12.00	10.50
Lead, St. Louis	17.30	17.30	17.30	14.80
Aluminum, virgin	16.00	16.00	15.00	15.00
Nickel, electrolytic	36.56	36.56	36.56	37.67
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	35.00	35.00	35.00	33.00

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
July 6, 1948	3.24473¢ per lb.	$40.53 per gross ton	$40.91 per gross ton
One week ago	3.24473¢ per lb.	$40.53 per gross ton	$40.66 per gross ton
One month ago	3.24473¢ per lb.	$40.53 per gross ton	$40.66 per gross ton
One year ago	2.85664¢ per lb.	$33.43 per gross ton	$35.58 per gross ton

	HIGH	LOW	HIGH	LOW	HIGH	LOW
1948	3.27585¢ Feb. 17	3.22566¢ Jan. 1	$40.53 May 18	$39.58 Jan. 6	$41.83 Jan. 29	$39.75 Mar.
1947	3.19541¢ Oct. 7	2.87118¢ Jan. 7	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan.
1945	2.44104¢ Oct. 2	2.38444¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct.
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr.
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr.
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr.
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept.
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan.
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec.
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec.
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec.

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. basing points in cents per pound unless otherwise indicated. Extras apply. Delivered prices are minimum and do not reflect 3 pct tax on freight. Industry practice has discontinued arbitrary f.o.b. prices at Gulf and Pacific Ports. Space limitations prevent quotation of delivered prices at major ports. (1) Commercial quality sheet grade; primes, 0.25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Cokes, 1.25 lb, deduct 40¢ per base box. (6) 18 gage and heavier. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 40,000 lb & over. (9) Carload lot in manufacturing trade. (10) Arbitrary delivered prices. (11) Hollowware enameling, gages 29 to 31 only. (12) Produced to dimensional tolerances in AISI Manual Sec. 6. (13) Delivered San Francisco only. (14) Kaiser Co. prices (15) from 0.035 to 0.075 in. thick by ¾ to 3½ in. wide. (16) Deliverd Los Angeles; add 0.55¢ per 100 lb for San Francisco. (17) Slab prices subject to negotiation in most cases. (18) 24 to 14 gage, up to 48 in.; 26 gage, up to 42 in.; 30 to 27 gage, up to 36 in.

PRODUCTS	Prices at basing points apply only to the sizes and grades produced at those points.												DELIVERED TO		
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		San Francisco, Los Angeles	Detroit[19]	New York	Philadelphia
INGOTS Carbon forging	$46.00	Rerolling ingots—$36.00 per net ton f.o.b. mill (Spot market as $75 to $90 per gross ton)													
Alloy	$56.00										Canton = $56.00				
BILLETS, BLOOMS, SLABS Carbon, rerolling[17]	$45.00	$45.00	$45.00	$47.00	$45.00	$45.00		$45.00							
Carbon forging billets	$54.00	$54.00	$54.00	$54.00	$54.00	$54.00	(per net ton)								
Alloy	$66.00	$66.00				(Bethlehem, Massillon, Canton = $66.00)									
PIPE SKELP	2.85 to 2.90						2.90								
WIRE RODS	2.80 to 3.55	2.80 to 3.80		2.80 to 3.05	2.85						Worcester = 2.90	3.5245[13]			
SHEETS Hot-rolled[4]	2.75 to 2.80	2.75 to 2.80	2.75	2.80	2.75 to 2.80	2.80	2.75 to 2.80	2.80		Ashland, Ky. = 2.80		3.494[14] to 3.6875	2.96 to 3.01	3.18 to 3.31	3.06 to 3.24
Cold-rolled[1]	3.45 to 3.50	3.45 to 3.55	3.45	3.50		3.55	3.55	3.55[18]	3.65	3.50			3.66	3.93 to 4.01	3.81 to 3.94
Galvanized (10 gage)	3.85	3.95	3.85 to 3.95		3.85 to 3.95		3.95	3.95	4.0	3.95	Ashland = 3.95	4.624[16]		4.33	4.21
Enameling (12 gage)	3.85	3.75	3.75 to 3.85	3.95			3.95		4.05	3.85			4.11 to 4.16	4.41	4.34
Long ternes[3] (10 gage)	4.05		4.05											4.61	4.54
STRIP Hot-rolled[3]	2.80	2.75 to 2.80	2.75	2.75 to 2.80	2.75		2.75 to 2.80					3.554[15] to 3.9125	2.96 to 3.01	3.36	3.29
Cold-rolled[4]	3.50	3.55 to 3.65	3.55	3.45 to 3.50			3.55			Worcester = 3.65 to 3.75			3.66	4.05	3.99
TINPLATE Cokes, 1.50 lb,[5] base box	6.70	6.70	6.70		6.80			6.80	6.90	(Warren, Ohio = $6.80)				7.15	7.06
Electrolytic 0.25, 0.50, 0.75 lb, box	Deduct $1.00, 80¢ and 60¢ respectively from 1.50 lb coke base box price.														
TERNES, MFG., special coated	Deduct 90¢ from 1.50 lb coke base box price.														
BLACKPLATE, CANMAKING 55-70 lb, 75-95 lb, 100-128 lb	Deduct $1.60, $1.70 and $1.60 respectively fr[illegible] 1.50 lb coke base box price.														
BLACKPLATE, h.e., 29 ga.[11]	4.65	4.65	4.65					4.75	4.85					5.13	5.01
BARS Carbon Steel	2.85 to 2.90	2.8[illegible] to 2.90	2.85	2.90	2.85 to 2.90	2.90	2.85 to 2.90					3.579[15] to 3.629[16]	3.06 to 3.11	3.40	3.34
Reinforcing (billet)[7]	2.70 to 2.80	2.70 to 2.80	2.70		2.70		2.70	2.75				3.325[15]		3.13	3.01
Cold-finished[1]	3.45 to 3.55	3.45 to 3.55		3.45									3.60 to 3.76	4.01	3.94
Alloy, hot-rolled	3.20	3.20 to 3.30	3.20			3.30	3.20	Bethlehem, Massillon, Canton = 3.30						3.56	3.48
Alloy, cold-drawn	4.00 to 4.10	4.00 to 4.10		4.00		4.10		Massillon, Canton = 4.10						4.56	4.49
PLATE Carbon steel[12]	2.90 to 2.95	2.90 to 2.95	2.90 to 2.95	2.95	2.85 to 2.90		2.90 to 2.95	Coatesville = 3.45, Claymont = 3.65 [illegible].95 Geneva, Utah = 2.90				3.8375[14]		3.33	3.21
Floor plates	4.05	3.95 to 4.05	3.95	4.05										4.81	4.54
Alloy	3.70	3.70	3.70						Coatesville = 4.80					4.28	4.19
SHAPES, Structural	2.75	2.75 to 2.80	2.75 to 2.80		2.75		Bethlehem = 2.80, Geneva, Utah = 2.75					3.424[15] to 3.49		3.06	2.98
MANUFACTURERS' WIRE[8] Bright	3.45 to 3.80	3.45 to 4.05		3.45	3.45 to 3.55					Worcester = 3.55 Duluth = 3.50		4.4645[15]		3.95	3.94
Spring (high carbon)	4.50	4.50		4.50						Worcester = 4.60 Trenton, Duluth = 4.75		5.5345[15]		5.00	4.99
PILING, Steel sheet	3.30	3.30			[illegible]	3.30								3.83	3.79

CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

Basing Point	Chromium Nickel No. 304	Chromium Nickel No. 302	Straight Chromium No. 410	Straight Chromium No. 430	Straight Chromium No. 442	Straight Chromium No. 446
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Water, Syracuse, Ft. Wayne, Titusville, Beth, Brackenridge	23.00	22.50	17.50	17.50	21.00	25.50
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville, Beth, Brackenridge	27.50	26.00	20.50	21.00	24.50	30.00
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet, Beth, Brackenridge	27.50	26.00	20.50	21.00	24.50	30.00
Plates, P'gh, Middletown, Canton, Brackenridge, Balt, Coatesville	31.50	29.50	23.50	24.00	28.00	33.00
Shapes, structural, P'gh, Chi, Brackenridge	27.50	26.00	20.50	21.00	24.50	30.00
Sheets, P'gh, Chi, Middletown, Canton, Balt, Brackenridge	39.00	37.00	29.00	31.50	35.50	39.50
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.50	23.50	18.50	19.00	26.00	38.00
Strip, c-r, P'gh, Cleve, Jersey City, Reading, Canton, Youngstown, Balt, W. Leechburg	32.50	30.50	24.00	24.50	35.00	56.50
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila, Ft. Wayne, Brackenridge	27.50	26.00	20.50	21.00	24.50	30.00
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton, W. Leechburg	32.46	30.30	23.80	24.34	34.82	56.26
Rod, h-r, Syracuse	27.05	25.97	20.02	20.56	24.34	28.75
Tubing, seamless, P'gh, Chi, Canton, Brackenridge, Milwaukee	72.09	72.09	.....	68.49	.....	.....

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	14.00¢
8 to 16	48, 60, 72	14.50¢
7	48, 60	15.75¢
6	48, 60	17.00¢
4, 5	40	17.50¢
3	40	18.50¢
2½	24, 30	19.00¢
2	24, 30	21.00¢
Carbon		
40	100, 110	6.75¢
35	65, 110	6.75¢
30	65, 84, 110	6.75¢
24	72 to 104	6.75¢
17 to 20	84, 90	6.75¢
14	60, 72	7.25¢
10, 12	60	7.50¢
8	60	7.75¢

TOOL STEEL

*(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. *Also Canton, Ohio)*

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	52¢
18	4	1	—	5	$1.29
18	4	2	—	—	93¢
1.5	4	1.5	8	—	59¢
6	4	2	6	—	63¢

High-carbon-chromium* ..... 47¢
Oil hardening manganese* ..... 26¢
Special carbon* ..... 24¢
Extra carbon* ..... 20¢
Regular carbon* ..... 17¢

Warehouse prices on and east of Mississippi are 2¢ per lb higher; west of Mississippi, 4¢ higher.

ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	Per lb
Armature	4.70¢ to 5.05¢
Electrical	5.20¢ to 5.45¢
Motor	5.95¢ to 6.30¢
Dynamo	6.65¢ to 7.50¢
Transformer 72	7.15¢ to 8.25¢
Transformer 65	7.85¢ to 9.20¢
Transformer 58	8.55¢ to 9.90¢
Transformer 52	9.35¢ to 9.70¢

F.o.b. Chicago and Gary: armature through motor only. F.o.b. Granite City add to lower quotation 0.55¢ for armature through and including 72, and 0.45¢ for balance.

RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, 100 lb and heavier, No. 1 O.H., per 100 lb.... $2.70 to $2.75*
Joint bars, 100 lb..... 3.75
Light rails (from billets) per 100 lb. 3.05

* CF&I charges $3.05.

	Base per lb
Cut spikes	4.85¢
Screw spikes	6.90¢
Tie plate, steel	3.55¢
Tie plates, Pittsburg, Calif.	3.70¢
Track bolts	7.00¢
Track bolts, heat treated, to railroads	7.25¢

C-R SPRING STEEL

Base per pound f.o.b. Pittsburgh, Cleveland

0.08 to 0.40 carbon	3.45¢
0.41 to 0.60 carbon	4.95¢
0.61 to 0.80 carbon	5.55¢
0.81 to 1.05 carbon	7.05¢
1.06 to 1.35 carbon	9.35¢

Worcester, add 0.20¢

CLAD STEEL

Base prices, cents per pound

Stainless-clad	Plate	Sheet
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Coatesville, Pa.	*24.00	*22.00
Nickel-clad 10 pct, f.o.b. Coatesville, Pa.	21.50	....
Inconel-clad 10 pct, f.o.b. Coatesville	30.00	....
Monel-clad 10 pct, f.o.b. Coatesville	24.00	....
Aluminized steel Hot dip, 20 gage, f.o.b. Pittsburgh	....	9.00

* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. Pittsburgh, Chicago Birmingham

	Base Column	San Francisco
Standard & coated nails*	91	112
Galvanized nails*	91	112
Woven wire fence†	97	120
Fence posts, carloads††	104	...
Single loop bale ties	94	118
Galvanized barbed wire**	111	131
Twisted barbless wire	111	...

* Also Duluth; Worcester, 6 column higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth only

	Base per 100 lb	San Francisco
Annealed fence wire‡	$4.10	$5.1145
Annealed, galv. fencing‡	4.55	5.5645
Cut nails, carloads‡‡	6.15	...

‡ Add 10¢ at Worcester. ‡‡ Wheeling only, Pittsburgh add 15¢ (less 20¢ to jobbers).

HIGH STRENGTH, LOW ALLOY STEELS

base prices, cents per pound

Steel	Alde-cor	Corten	Double Strength No. 1	Dyn-alloy	HI Steel	Mayari R	Otis-coloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	4.55	4.45	4.55	4.55	4.45	4.55	4.45	4.55	4.55
Sheets									
Hot-rolled	4.30	4.20	4.30	4.50	4.20	4.30	4.20	4.30	4.30
Cold-rolled	5.30	5.20	5.30	....	5.20	5.30	5.20	5.30	5.30
Galvanized		5.90	....	....	5.90	6.00		....	....
Strip									
Hot-rolled	4.30	4.20	4.30	...	4.20	4.30	4.20	4.30	4.30
Cold-rolled	....		5.30	....	....	5.30	5.30	5.30	5.30†
Shapes	....	4.20	....	....	4.20	4.30	4.20	4.30	....
Beams	....	4.20	....	....	4.20	4.30	....	....	....
Bars									
Hot-rolled	4.45	4.35	4.45	....	4.35	4.45	4.35	4.45	4.45
Bar shapes	....	4.35	....	....	4.35	4.45	4.35	4.45	....

† Pittsburgh, add 0.10¢ at Chicago and Gary.

PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh and Lorain, steel buttweld and seamless. Others f.o.b. Pittsburgh only

Base price, $200.00 per net ton

One producer allows 1 point less discount on steel buttweld.

Standard, threaded & coupled

Steel, buttweld	Black	Galv.
⅛-in.	48	30½
¼-in.	51	34½
⅜-in.	53½	37½
½-in.	54	38
¾-in.	54½	38½
2-in.	55	39
2½ and 3-in.	55½	39½
Wrought Iron, buttweld		
⅛-in.	+11	+35
¼-in.	+ 1½	+25
⅜ and ½-in.	4	+16½
¾-in.	9½	+13
1-in.	10	+12½
Steel, lapweld		
2-in.	44½	28
2½ and 3-in.	48½	32
3½ to 6-in.	50½	34
Steel, seamless		
2-in.	43½	27
2½ and 3-in.	46½	30
3½ to 6-in.	48½	32
Wrought Iron, lapweld		
2-in.	1½	+20
2½ to 3½-in.	4	+16
4-in.	8	+10½
4½ to 8-in.	6	+12

Extra Strong, plain ends

Steel, buttweld		
⅛-in.	46	30
¼-in.	50	34
⅜-in.	52	37
½-in.	52½	37½
¾-in.	53	38
1-in.	53½	38½
1¼ and 1½-in.	54	39
Wrought Iron, buttweld		
⅛-in.	+ 6½	+29
¼-in.	+ ½	+23
⅜ and ½ in.	4	+16½
¾-in.	10	+12½
Steel, lapweld		
2-in.	43½	28
2½ and 3-in.	48½	33
3½ to 6-in.	52	36½
Steel, seamless		
2-in.	42½	27
2½ and 3-in.	46½	31
3½ and 6-in.	50	34½
Wrought Iron, lapweld		
2-in.	4½	+16½
2½ to 4-in.	13	+ 6
4½ to 6-in.	9	+10½

Basing discounts for standard pipe are for threads and couplings. For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. F.o.b. Gary prices are one point lower discount on all buttweld. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft, f.o.b. Pittsburgh in carload lots, cut length 4 to 24 ft. inclusive.

OD in In.	Gage BWG	Seamless* Hot-Rolled	Seamless* Cold-Drawn	Electric Weld Hot-Rolled	Electric Weld Cold-Drawn
2	13	$17.84	$20.99	$17.30	$20.36
2½	12	23.99	28.21	23.27	27.36
3	12	26.68	31.40	25.88	30.46
3½	11	33.35	39.26	32.35	38.08
4	10	41.40	48.70	40.16	47.24

* One company charges approx. 2 pct less.

CAST IRON WATER PIPE

Per net ton

6-in to 24-in., del'd Chicago $98.70
6-in. to 24-in., del'd New York 95.50
6-in. to 24-in., Birmingham 85.50
4-in and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less 112.30

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

Percent Off List

½ in. & smaller x 6 in. & shorter... 45
9/16 & ⅝ in. x 6 in. & shorter..... 46
¾ in. & larger x 6 in. & shorter..... 43
All diam, longer than 6 in. 41
Lag, all diam over 6 in. long..... 44
Lag, all diam x 6 in. & shorter..... 46
Plow bolts 54

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller 43
9/16 to 1 in. inclusive 42
1⅛ to 1½ in. inclusive 40
1⅝ in. and larger 35

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts	USS	SAE
7/16 in. and smaller	..	46
½ in. and smaller	44	..
½ in. through 1 in.	..	44
9/16 in. through 1 in. ...	43	..
1⅛ in. through 1½ in. ..	41	42
1⅝ in. and larger	35	..

In full case lots, 15 pct additional discount. For 200 lb or more, freight allowed up to 50¢ per 100 lb, based on Cleveland, Chicago, Pittsburgh.

Stove Bolts

Packages, nuts separate .....65 and 10
In bulk 75

On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over

Large Rivets (½ in. and larger)

Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham $5.65
F.o.b. Lebanon, Pa. 5.80

Small Rivets (7/16 in. and smaller)

Percent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham 55

Cap and Set Screws

(In packages) *Percent Off List*

Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright 53
¾ to 1 in. x 6 in., SAE 1035, heat treated 44
Set screws, oval points 57
Milled studs 29
Flat head cap screws, listed sizes... 16
Fillister head cap, listed sizes 37

Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.

FLUORSPAR

Metallurgical grade, f.o.b. producing plant.

Effective CaF_2 Content:	*Base price per short ton*
70% or more	$35.00
65% but less than 70%	34.00
60% but less than 65%.....	33.00
Less than 60%	32.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

Per Gross Ton

Old range, bessemer..... $6.60
Old range, nonbessemer..... 6.45
Mesabi, bessemer 6.35
Mesabi, nonbessemer 6.20
High phosphorus 6.20

Increases or decreases in freight rates, dock handling charges and taxes after Apr. 1, 1948, are to be added to above prices.

METAL POWDER

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags..... 7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe ..... 9.5¢ to 16.0¢
Electrolytic iron, annealed, 99.5+% Fe .....19.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe. 44.0¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe...63.0¢ to 80.0¢
Carbonyl iron, minus 300 mesh, 98%, 99.8+% Fe....90.0¢ to $1.75
Aluminum ..... 23.0¢
Antimony ..... 46.0¢
Brass .....24.0¢ to 28.5¢
Copper, electrolytic ..... 30.625¢
Copper, reduced ..... 20.5¢
Cadmium $2.40
Chromium, electrolytic, 99% min. $3.50
Lead ..... 24.0¢
Manganese ..... 50.0¢
Molybdenum, 99% $2.65
Nickel, unannealed ..... 51.5¢
Nickel, spherical, minus 30 mesh ..... 53.0¢
Silicon ..... 29.0¢
Solder powder .....8.5¢ plus metal cost
Stainless steel, 302..... 75.0¢
Tin $1.11
Tungsten, 98%, 99%..... $2.90

COKE

Furnace, beehive (f.o.b. oven) Net Ton
Connellsville, Pa. $13.50
Foundry, beehive (f.o.b. oven)
Connellsville, Pa. .....16.00 to 17.00
Foundry, Byproduct
Chicago, del'd $18.60
Chicago, f.o.b. 17.50
Detroit, f.o.b. 18.50
New England, del'd 21.75
Seaboard, N. J., f.o.b..... 20.50
Philadelphia, f.o.b. 19.50
Swedeland, Pa., f.o.b. 19.50
Ashland, Ohio, f.o.b. 18.25
Painesville, Ohio, f.o.b. 19.45
Erie, del'd 19.95
Cleveland, del'd 17.90
Cincinnati, del'd 18.59
St. Louis, del'd 18.03
Birmingham, del'd 16.71

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

Carloads, Per 1000

First quality, Pa., Md., Ky., Mo. (except Salina, Pa., add $5).....$80.00
No. 1 Ohio..... 74.00
Sec. quality, Pa., Md., Ky., Mo..... 74.00
No. 2 Ohio 66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)..... 11.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.....$80.00
Childs, Pa. 84.00
Hays, Pa. 85.00
Chicago District 89.00
Western, Utah and Calif..... 95.00
Super Duty, Hays, Pa., Athens, Tex. 85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.).....$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa. 16.00
Silica cement, net ton, bulk, Ensley, Ala. 15.00
Silica cement, net ton, bulk, Chicago District .....$14.75 to 15.00
Silica cement, net ton, bulk, Utah and Calif. 21.00

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester $69.00

Magnesite Brick

Standard, Balt., and Chester.....$91.00
Chemically bonded, Balt. and Chester 80.00

Grain Magnesite

Std. ¾-in. grains

Domestic, f.o.b. Balt. and Chester, in bulk, fines removed.....$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines.....$30.50 to 31.00
in sacks with fines..... 35.00 to 35.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, net ton, bulk. Midwest, add 10¢; Missouri Valley, add 20¢.....$11.85

WAREHOUSE PRICES

Base prices, delivered metropolitan areas, per 100 lb.

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$4.45-4.97	$5.66-5.81	$5.90-5.92	$4.85-5.36	$5.98-6.55	$4.87	$4.58	$4.91	$5.65-5.73	$8.50-8.65	$8.80	$10.38	$10.53
New York	4.74-4.79	5.70[1]-5.95[1]	6.19	5.08-5.58	6.05-6.30	5.09-5.14	4.77-4.82	5.05-5.08	5.78	8.58-8.73	8.73-8.88	10.23-10.43	10.43-10.58
Boston	4.88	5.74	6.28	5.64	6.90	5.23	4.94	5.09	5.96	9.05	9.20	10.51	10.66
Baltimore	4.27	....	5.62	4.79	....	4.72	4.69	4.84	5.66	....	....	.....	.....
Norfolk	4.90	....	....	5.30	....	5.15	5.15	5.20	6.00	....	....	.....	.....
Chicago	4.20	5.00	5.88	4.35	5.35-6.65	4.55	4.35	4.35	5.00-5.10	8.20	8.35	9.50	9.65
Milwaukee	4.42	5.22	5.87	5.02	5.57	4.77	4.57	4.57	5.334	8.534	8.684	9.784	9.934
Cleveland	4.20	5.00[1]	5.74	4.52	5.95	4.55†	4.67	4.35	5.00-5.10	8.64	8.79	9.50	9.65
Buffalo	4.25	5.15	6.06	5.26	5.72	4.96	4.40‡	4.40‡	5.10	8.20	8.35	9.50	9.65
Detroit	4.60	5.45	6.07	4.80	5.70	4.90†	4.80	4.50	5.16	8.72-8.87	8.87-9.02	9.94-10.17	10.14-10.32
Cincinnati	4.59	5.22	5.57	4.80	....	4.96	4.80	4.76	5.59	8.85	9.00	10.16	10.31
St. Louis	4.59	5.39	6.17-6.27	4.69-5.24	5.97	4.89-4.94	4.74	4.74	5.62	8.82	8.97	10.07	10.27
Pittsburgh	4.20-4.25	5.10[1]	5.65	4.30-4.35	....	4.55	4.35	4.35	5.00	8.20	8.35	9.50	9.65
St. Paul	4.66	5.46	6.01	4.76	....	5.01	4.81	4.81	5.94	....	....	.....	.....
Omaha	5.31	....	6.76	5.41	....	5.66	5.41	5.46	6.06	....	....	.....	.....
Indianapolis	4.52	5.31	5.96	4.62	5.72-5.87	4.87	4.67	4.67	5.52	....	....	9.97	10.17
Birmingham	4.45[11]	....	5.80	4.45[11]	....	4.65[11]	4.40[11]	4.40[11]	6.13	....	....	.....	.....
Memphis	4.91[11]	5.98[1]	5.08[11]	5.11[11]	5.23[11]	5.21[11]	5.01[11]	5.01[11]	5.50	....	....	.....	.....
New Orleans	*5.08[11]	6.44[1]	....	5.28[11]	....	5.38[11]	*5.10[11]	*5.18[11]	6.34[6]	....	....	.....	.....
Houston	5.55	....	7.21	5.65	....	5.90	5.70	5.70	7.00	9.40	9.25	10.40	10.55
Los Angeles	5.70	7.25[1]	7.30	6.00	8.60[5]	5.35	5.15**	5.45	7.25[14]-7.35[14]	9.55[15]	9.40[15]	10.95[15]	11.15[15]
San Francisco	5.35[8]	6.55-7.25	7.05-7.45	5.70[8]	8.60	5.30	5.10**	5.00	7.40	9.55[15]	9.40[15]	10.95[15]	11.15[15]
Seattle	5.45[4]	7.25[2]	7.10[2]	6.15[4]	....	5.60[4]	5.30[4]	5.65[4]	7.35[14]-7.45[14]	8.70[15]	9.70[15]	.....	11.30[15]
Portland	7.70[4]	7.25[2]	7.10	5.85[4]	....	5.70[4]	5.40[4]	5.65[4]	7.45[14]	.....	8.95[6]	.....	11.30[15]
Salt Lake City	6.40	....	7.85	6.70	....	6.00	6.25	6.56	7.55	....	....	.....	.....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities; bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb.

* Add 46¢ for sizes not rolled in Birmingham.
† Up to ¾ in. thick and 90 in. wide.
‡ Add 41¢ for sizes not rolled at Buffalo.
** Add 15¢ for sizes not rolled at Geneva.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight.

BASING POINT* PRICES

Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	40.00	40.50	41.00	41.50	.....
Birmingham	38.88	39.38	....	.....	.....
Buffalo	40.00-42.38*	40.00-42.88*	40.50 43.38*	.....	.....
Chicago	38.50	39.00	39.50	40.00	.....
Cleveland	38.50-39.75*	39.00-40.25*	39.50-40.75*	.....	.....
Duluth	39.00	39.50	40.00	40.50	.....
Erie	38.50	39.00	39.50	40.00	.....
Everett		45.00	45.50	.....	.....
Granite City	45.25	45.75	46.25	.....	.....
Neville Island	42.00	42.50	42.50	43.00	.....
Provo	39.00	39.50	....	.....	.....
Sharpsville	39.00	39.50	39.50	40.00	.....
Steelton	40.00	.....	.....	.....	46.00
Struthers, Ohio	42.50	.....	.....	.....	.....
Swedeland	45.00	45.50	46.00	46.50	.....
Toledo	38.50	39.00	39.50	40.00	.....
Troy, N. Y.	.....	.....	.....	.....	46.00
Youngstown	39.00	39.50	39.50	40.00	.....

DELIVERED PRICES† (BASE GRADES)

Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	48.75	49.25	.....	.....
Boston	Steelton	6.27	46.27	.....	.....	.....	52.27
Brooklyn	Bethlehem	3.90	43.90	44.40	44.90	45.40	.....
Cincinnati	Birmingham	6.09	44.97	45.47	....	.....	.....
Jersey City	Bethlehem	2.39	42.39	42.89	43.39	43.89	.....
Los Angeles	Provo	6.93	45.93	44.43	.....	.....	.....
Mansfield	Cleveland-Toledo	3.03	41.53-42.78*	42.03-43.28*	42.53 43.78*	.....	.....
Philadelphia	Bethlehem	2.17	42.17	42.67	43.17	43.67	.....
Philadelphia	Swedeland	1.31	46.31	46.81	47.31	47.61	.....
Philadelphia	Steelton	2.81	42.81	.....	.....	.....	48.81
San Francisco	Provo	6.93	45.93	46.43	.....	.....	.....
Seattle	Provo	6.93	45.93	46.43	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	46.00	46.50	47.00	.....	.....

* Republic Steel Corp. price. Basis: pig iron at Cleveland and Buffalo set by average price of No. 1 hvy. mlt. steel scrap at Cleveland or Buffalo respectively as shown in last week's issue of THE IRON AGE. Price is effective until next Sunday midnight.

Basing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio—$53.50; f.o.b. Buffalo—$54.75. Add $1.25 per ton for each additional 0.50 pct Si, up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $58.00 per gross ton, f.o.b. Lyles, Tenn. Delivered Chicago, $65.55. High phosphorus charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Phila., New York, Birmingham.
Carload lots (bulk) $145
F.o.b. Rockwood, Tenn. $150
Less ton lots (packed) 189.00
Delivered Pittsburgh 151.00
$1.80 for each 1% above 82% Mn; penalty, $1.80 for each 1% below 78%.

Briquets—Cents per pound of briquet, freight allowed, 66% contained Mn.

	Eastern	Central	Western
Carload, bulk ...	8.70	8.95	9.50
Ton lots	10.30	10.90	12.80
Less ton lots	11.20	11.80	13.70

Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Carloads	$51.00	$52.00
F.o.b. Pittsburgh.	50.00	51.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, f.o.b. shipping point, freight allowed, eastern zone.
96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.
Carload, bulk 32
L.c.l. lots 34

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads 32
Ton lots 34
Less ton lots 36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.

	Carloads	Ton	Less
0.07% max. C. 0.06% P, 90% Mn.	23.00	24.85	26.05
0.10% max. C.	22.50	24.35	25.55
0.15% max. C.	22.00	23.85	25.05
0.30% max. C.	21.50	23.35	24.55
0.50% max. C.	21.00	22.85	24.05
0.75% max. C., 7.00% max. Si.	18.00	19.85	21.05

Silicomanganese

Contract basis, lump size, cents per pound of metal, f.o.b. shipping point, freight allowed, 65-70% Mn, 17-20% Si, 1.5% max. C.
Carload bulk 7.80
Ton lots 9.45
Briquet, contract, basis, carlots, bulk freight allowed, per lb of briquet 8.75
Ton lots 10.35
Less ton lots 11.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct., f.o.b. Keokuk, Iowa, openhearth $78.00, foundry, $79.00; $78.75 f.o.b. Niagara Falls; $77.50 f.o.b. Jackson, Ohio. Electric furnace silvery iron is not being produced at Jackson. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 per ton for each 0.50 pct Mn over 1 pct.

Silicon Metal

Contract price, cents per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots packed.

	Eastern	Central	Western
96% Si, 2% Fe..	16.90	17.50	18.10
97% Si, 1% Fe..	17.30	17.90	18.50

Silicon Briquets

Contract price, cents per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si, 1 lb Si briquets.

	Eastern	Central	Western
Carload, bulk ...	5.25	5.50	5.70
Ton lots	6.85	7.45	7.75
Less ton lots ...	7.75	8.35	8.65

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
25% Si	16.50	....	....
50% Si	9.30	9.80	10.00
75% Si	11.80	12.10	12.85
85% Si	13.30	13.60	14.35
90% Si	15.00	15.30	16.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, f.o.b. shipping point, freight allowed. Add 1.5¢ for central zone; 3.5¢ for western zone.

	Cast	Turnings	Distilled
Ton lots	$1.85	$2.70	$3.40
Less ton lots	2.20	3.05	4.20

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, Contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.

	Eastern	Central	Western
0.06% C	26.50	26.90	27.00
0.10% C	26.00	26.40	26.50
0.15% C	25.50	25.90	26.00
0.20% C	25.25	25.65	25.75
0.50% C	25.00	25.40	25.50
1.00% C	24.50	24.90	24.75
2.00% C	24.25	24.65	24.75
65-69% Cr, 4-9% C	18.60	19.00	19.15
62-66% Cr. 4-6% C. 6-9% Si.	19.45	19.85	20.00

Briquets — Contract price, cents per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.

	Eastern	Central	Western
Carload, bulk ...	12.50	12.75	12.85
Ton lots	14.00	14.90	15.50
Less ton lots....	14.90	15.80	16.40

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

	Eastern	Central	Western
Carload	19.70	20.10	20.25
Ton lots	21.85	23.15	23.95
Less ton lots	23.35	24.65	25.45

..Low carbon type: 62-66% Cr, 4-6% Si, 4-6% mn, 1.25% max. C.

	Eastern	Central	Western
Carload	25.00	25.40	25.50
Ton lots	27.30	27.95	29.15
Less ton lots ...	29.10	29.75	30.95

Chromium Metal

Contract prices, cents per lb, chromium contained carload packed, f.o.b. shipping point freight allowed, 97% min. Cr. 1% max. Fe.

	Eastern	Central	Western
0.20% max. C. ..	97.00	98.50	99.75
0.50% max. C. ..	93.00	94.50	95.75
9.00% min. C. ..	91.50	93.00	94.25

Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.
30-35% Ca, 60-65% Si, 3.00% max. Fe
Cr 28-32% Ca, 60-65% Si, 6.00% max. Fe.

	Eastern	Central	Western
Carloads	16.25	16.75	18.80
Ton lots	19.35	20.10	22.25
Less ton lots	20.85	21.60	23.75

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, f.o.b. shipping point, freight allowed.
16-20% Ca, 14-18% Mn, 53-59% Si.

	Eastern	Central	Western
Carloads	17.50	18.00	20.05
Ton lots	19.80	20.65	22.40
Less ton lots	20.80	21.65	23.40

CMSZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed.
Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.
Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

	Eastern	Central	Western
Ton lots	18.00	19.10	21.05
Less ton lots	19.25	20.35	22.30

V Foundry Alloys

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn. V-7: 28-32% Cr, 15-21% Si, 14-16% Mn.
Ton lots ..... 14.60¢
Less ton lots ..... 15.85¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed. Si 56%, Ti 9%, Ca 5%.
Ton lots ..... 17.90¢
Less ton lots ..... 19.40¢

SMZ

Contract price, cents per pound of alloy, f.o.b. shipping point, freight allowed. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

	Eastern	Central	Western
Ton lots	15.75	16.85	18.80
Less ton lots	17.00	18.10	20.05

Other Ferroalloys

Ferrotungsten, standard, lump or ½ x down, packed, f.o.b. plant Niagara Falls, Washington, Pa., York, Pa., per pound contained W, 5 ton lots, freight allowed... $2.25

Ferrovanadium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V.
Openhearth $2.90
Crucible 3.00
High speed steel (Primos)..... 3.10

Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound Contained V_2O_5 ..... $1.20

Ferrocolumbium, 50-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb
Ton lots $2.50
Less ton lots $2.55

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo. ..... 95¢

Calcium molybdate, 40-45%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo. ..... 80¢

Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo..... 80¢

Molybdenum oxide in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo..... 80¢

Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti $1.23

Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti $1.35
Less ton lots $1.40

High carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton....$152.50

Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
10 tons to less carload..... $75.00

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Carload lots ..... 18.40¢

Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy.
Carload, bulk ..... 6.00¢

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.
Carload ..... 7.20¢
Ton lots ..... 7.70¢

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
Car lots ..... 9.50¢
Ton lots ..... 10.25¢

Boron Agents

Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.

	Eastern	Central	Western
	$1.20	$1.23	$1.21

Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.

Ton lots	$1.89	$1.903	$1.935
Less ton lots.	2.01	2.023	2.044

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.
Less ton lots...$1.80 $1.8125 $1.8445

Silcaz, contract basis, f.o.b. plant freight allowed, per pound.
Carload lots ..... 39.00¢

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.
No. 1 ..... 93¢
No. 6 ..... 63¢
No. 79 ..... 45¢

Bortam, f.o.b. Niagara Falls
Ton lots, per pound..... 45¢
Less ton lots, per pound..... 50¢

Carbortam, f.o.b. Suspension Bridge, N. Y., freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.
Ton lots, per pound..... 8.625¢

Borosil, f.o.b. Philo, Ohio, freight allowed, B 3%-4%, Si 40%-45%, per lb contained B..... $6.25

New Hot Metal Cars Add 75,000 Tons To J & L Iron Capacity

Pittsburgh

• • • **Installation of** 13 new 200-ton mixer type hot metal cars has stepped up iron producing capacity at Jones & Laughlin's Aliquippa Works by 75,000 net tons a year, according to company spokesmen. The "submarine ladles," so called because of their appearance, were built by M. H. Treadwell Co., Pittsburgh.

The steel company reports that the new cars speed production by delivering to the bessemer converters a greater percentage of the molten iron produced by Aliquippa's five furnaces. Its engineers cite five advantages for the new cars: (1) They eliminate smaller iron ladles and reduce handling; (2) skulls are eliminated; (3) fewer runners are required; (4) the iron reaches the bessemers at a higher temperature; and (5) the enclosed construction of the mixer type ladles retains enough heat to permit use of some lightweight steel scrap. They have also eliminated two large mixers at Aliquippa.

The cars weigh 115 tons. Including the weight of fire brick lining and a capacity load of iron, the total weight is 368 tons. They are approximately 53 ft long from center to center of the couplings, and the height is approximately 13 ft.

The mixer type ladle car is so designed that the ladle remains in the trunions during all productive operations. The hot metal is poured by means of an electric motor directly connected to a worm gear unit which transmits the power through a train of gears, the last of which is mounted on the trunion to revolve the ladle. The speed of the dumping mechanism is regulated to pour a maximum of 7 tons per min.

The ladle consists of a horizontal cylindrical middle section with conical ends to which trunions are attached. The circular cross-section of the ladle offers the advantages of more uniform expansion of the lining which reduces spalling and abrasion, the minimum amount of lining material, as well as radiating surface per ton of metal capacity, it was said.

The tapered ends of the ladle tend to cause the kish or graphitic carbon released by the hot metal to accumulate at the ladle spout. This kish may be readily removed from the ladle after the iron has been poured. Thus, damage to the lining which commonly occurs in the old style open-top cars is avoided. A lining life of 125,000 to 175,000 net tons is expected by Treadwell engineers.

Heat loss while the hot metal is in the mixer car depends upon the temperature of the ladle lining when the metal enters the ladle. From tests made by Treadwell, the average temperature of 180-net ton mixer car linings was 2050° and in 75-ton semi-closed top ladles was 1100°F. The new ladles at J&L are expected to exceed the temperature average for the 180-ton cars.

After the lining becomes heated to the temperature of the metal, the loss of heat from metal in the mixer car averages 10°F per hr during the next 10 hr period. Loss in the open top ladle averages 55° per hr during the first 4 hours, and approximately 35° per hr thereafter.

It is estimated that these savings, plus the elimination of one reladling operation and omission of the old style mixers, will total an average of nearly 300° from the blast furnace to the bessemers at Aliquippa. In this way the length of blow required at the bessemer will be reduced.

Stream Pollution

(CONTINUED FROM PAGE 127)

with the Academy of Natural Sciences in Philadelphia. Tests for the degree of stream pollution have heretofore been dependent on an analysis of the oxygen content of the water. It is conceivable that a new method of testing will grow out of this research based on a count of micro-organisms of various types.

The Dept. of Health also has underway two research projects at the Mellon Institute, one on stream purification and the other on acid mine water control.

The most critical water pollution in the state is located at Pittsburgh near the junction of the Allegheny and Monongahela Rivers. The Allegheny County Sanitary Authority has projected an $82 million project for laying sewer lines under the two rivers to bring sewage from a large area to a disposal plant on Neville Island for treatment. The sub-aqueous sewer project was required because of the concentration of heavy industry in the area and the expense that would be involved in laying the sewer underneath the steel mills lining one bank of the river, bordered by cliffs on the other. This project when completed will handle all sewage and industrial wastes from the area after pretreatment and restore the rivers to purity after decades of pollution.

The Delaware and Schuylkill Rivers at Philadelphia also present a severe pollution problem. The Schuylkill is now being cleaned up under the auspices of the Dept. of Forests and Waters. This river channel has been blocked for many years by anthracite residues now being dredged from the river bottom at State expense. The river no longer has purifying freshets or a free flowing deep stream, but these should be restored when the work is completed. Meanwhile, the City of Philadelphia is building an enormous sewage disposal installation to avoid pollution of the Delaware.

PERSONALS

(Continued from Page 112)

• **Romus Soucek** has been named sales manager of Aviation Gas Turbine Div.. Westinghouse Electric Corp., South Philadelphia, replacing **G. A. Hyland.** Mr. Soucek joined the Westinghouse Corp. in California in 1946 as headquarters aviation representative on the West Coast. He was formerly with Consolidated Vultee Aircraft Corp. **Russell E. Ebersole** has been appointed general manager of lamp sales for Westinghouse, Bloomfield, N. J., succeeding **William J. Massey,** who has retired after 50 years with the company's Lamp Div. Since 1944 Mr. Ebersole has been in charge of the Lamp Div. field sales. He joined Westinghouse in 1922. **H. G. Cheney** has been appointed assistant manager of lamp sales. For the past 4 years he has been assistant to the general lamp sales manager and supervisor of lamp sales contracts.

• **Alfred W. Ward** has been elected chairman of the board and **Fred H. McCurdy,** president and a director of Brooks Oil Co., Cleveland. Also elected were **W. Morrison** as vice-president and director, and **Joseph A. Rigby** as manager of engineering and sales. Mr. Ward joined the company in 1920 and has been president since 1940. Mr. McCurdy became associated with the company in 1932 and served as manager of the industrial division, as vice-president and as a director of the company.

• **W. J. Holtmeier** has been appointed eastern district manager of Standard Electrical Tool Co., Cincinnati.

• **Fred Schneller** has been appointed to the newly-created position of eastern sales manager of Construction Products Corp., Lynwood, Calif., with his offices in St. Louis. Mr. Schneller joined the western sales staff in 1947 and was formerly connected with Aerco Corp.

• **Ross C. Cornish** has joined the Gas Machinery Co., Cleveland, as consulting engineer. He was formerly associated with United States Gas Improvement Co. and Semet-Solvay Engineering Corp. **Robert Kyle** has been appointed gas sales engineer of Gas Machinery Co. He was formerly connected with General Controls Co. and Iroquois Gas Corp

• **Gerald Bogner** and **Delmar Baker,** formerly application engineers, have been appointed engineers and representatives of Kennametal, Inc.

PERSONALS

Mr. Bogner, previously in the Cleveland office, will be connected with the New York office and Mr. Baker will continue in Chicago. **William L. Chambers, Kenneth Twombley, Conrad R. Seim, Gerald Transue** and **Ralph Pearce** have been added to the staff of application engineers. Messrs. Chambers, Twombley and Seim will have their headquarters in Chicago, Mr. Transue in the Philadelphia office and Mr. Pearce in the Pittsburgh office.

• **L. S. Sternal** has joined the staff of Jackson Buff Corp., Long Island City, N. Y. as sales manager He was formerly connected with Minnesota Mining & Mfg. Co.

• **W. E. Boyer** has been appointed assistant zone manager in Los Angeles for Nash Motors Div., Nash-Kelvinator Corp. Mr. Boyer joined Nash Motors in 1946 as district manager in Los Angeles.

• **Garfield L. Miller, Jr.** has been elected a director of the Kelley Island Line & Transport Co., Cleveland.

• **Justin E. Fritts,** assistant sales manager of the northern territory of the Texas Co., has been named manager of the Buffalo Div. Mr. Fritts succeeds **Hamilton H. Wende,** who has retired.

• **Marvin S. Bandoli** has been appointed vice-president in charge of sales, Tracy Mfg. Co., Pittsburgh. Until recently he was president of Bandoli-McIntyre Co.

• **John M. Otter** has been named vice-president and general sales manager of Philco Corp., Philadelphia. Mr. Otter joined Philco in 1926 as district sales representative and for the past year has been general sales manager.

• **John H. Matthews,** vice president and director, Raybestos-Manhattan Inc., has been elected to the board of directors of Canadian Raybestos Co. Ltd. Peterborough, Ontario.

• **Earl T. Herniman,** former sales manager of Sterling Engine Co., has been appointed manager of the new Engine Div. of the H. D. Taylor Co., Buffalo.

• **Roger M. Scott** has joined the staff of Morgan Construction Co., Worcester, as engineer in the wire machinery department. He was formerly sales manager for New England Butt Co., Providence.

PERSONALS

• **Ralph J. Jess** has been appointed general superintendent, Steel Improvement & Forge Co., Cleveland. He joined the company in 1940 and served as production manager prior to his promotion.

• **Richard L. Harvey** has been made manager of labor relations, Baltimore & Ohio R. R. Co., Baltimore, succeeding **Walter G. Carl,** who has retired. Mr. Harvey joined the B&O in 1923 as a stenographer and has been promoted successively to higher positions at the general offices becoming superintendent of the wage bureau in 1945, which position he held until his new appointment. **T. S. Woods, D. H. Hicks** and **W. A. Harris** have been appointed assistant managers of labor relations for the B&O.

• **John D. Reilly,** president, and **E. P. Enfer,** treasurer, have been elected directors of Todd Shipyards Corp., New York.

• **Joseph A. Korany** has joined the research and development laboratories of Quaker Chemical Products Corp., Conshohocken, Pa.

• **John W. Beaver** has been named sales representative for the special chemicals division of Pennsylvania Salt Mfg. Co., Philadelphia, in the newly-created Maryland, Washington, D. C. and Virginia district. Formerly sales representative in the Wisconsin territory, Mr. Beaver joined Pennsalt in 1946.

• **Joseph E. Consolmagno** has been named chief of the press section for Willys-Overland Motors public relations department in Toledo. Mr. Consolmagno was formerly in charge of the Detroit Bureau of the New York Journal of Commerce and prior to that was on the Journal's New York editorial staff.

• **Edward H. Enberg, Jr.** has been placed in charge of all standardization and **John B. Verrier, Jr.** has been placed in charge of sales, for Kent Cliff Laboratories, Peekskill, N. Y. Both Mr. Enberg and Mr. Verrier were associated in similar capacities with Wilson Mechanical Instrument Co., Inc.

• **Alfred S. Kohl** has been appointed western division sales manager of Spencer Kellogg & Sons, Inc. with headquarters in Chicago. He was formerly manager of the company's castor oil department in Buffalo.

• **Wayne R. Sphar** has been appointed advertising manager of the Freedom-Valvoline Oil Co., Freedom, Pa. He formerly served in the same capacity with Jessop

PERSONALS

Steel Co. Mr. Sphar succeeds A. J. **Kilgariff** who will assume other duties at Freedom-Valvoline.

• **Jefts G. Beede** has been appointed sales engineer for the Boston territory of Leland-Gifford Co., Worcester.

• **Roger W. Jackson** has been named district sales manager of the General Electric Co. chemical department's central district, with headquarters in Cleveland. Mr. Jackson joined GE in 1943 and has been district representative at Pittsburgh for the past 3 years.

• **E. E. Bauer** has been named manager of central sales district of Peerless Pump Div., Food Machinery Corp. with headquarters in Chicago. He was formerly centrifugal pump sectional sales manager and is succeeded by **Frank W. McCann** who will be located in Quincy, Ill.

• **George W. Altman** has been named general manager of Bridgman Castings, Inc., Bridgman, Mich., a subsidiary of Hannifin Corp. Mr. Altman was formerly foundry manager of Lennox Furnace Co.

• **Charles W. Mackett,** assistant sales manager of Hewitt Rubber Div., Hewitt-Robins, Inc., has been appointed to the new position of manager of sales operations with headquarters in Buffalo. He has been with the company 32 years.

• **W. J. O'Brien** has been appointed representative for the state of Tennessee by Standard Transformer Co., Warren, Ohio. Mr. O'Brien was formerly operating consultant for Ebasco Services, Inc. and prior to that president of Memphis Power & Light Co.

• **S. Mason Bartlett** has been appointed distributor representative of Eastern Stainless Steel Corp. Baltimore. Mr. Bartlett was formerly associated with the Davison Chemical Corp. and Snap-On Tools Corp.

• **Frank J. Hoder, Jr.** has been named manager of Packard Motor Car Co.'s marine and industrial engine department in Detroit. For the past 6 years he was general manager and chief engineer of Marine Products Co.

• **Bruce F. Linck** has been named sales promotion manager of Elastic Stop Nut Corp. of America, Union, N. J. Mr. Linck has been associated with the ESNA sales department since 1943 and was formerly assistant to the general sales manager.

Discuss Safety Features To Prevent Mine Cave-ins

Washington

• • • **The Bureau of Mines** has released a report describing methods of preventing underground cave-ins and reducing this type of accident in iron mines of the Lake Superior District. Reviewing ground-support practices at 13 major iron mines in the Lake Superior area, the report is designed to aid other operators in combatting this underground mining hazard.

The 29-page circular deals with the fundamentals of ground support, the selection, installation and preservation of mine timbers, and the use of steel and concrete supports. Safety rules governing mining and timbering at three large metal mines as well as numerous drawings and photographs illustrating the various techniques discussed in the test are included.

A free copy of Information Circular 7459, "Support of Ground, Iron-Ore Mines, Lake Superior District" may be obtained from the Publications Section, Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.

Senate Committee Blocks Saudi-Arabian Exports

Washington

• • • **Efforts of the** Senate Special Small Business Committee to block indefinitely the further exports of steel pipe for the Saudi-Arabian pipeline has been temporarily successful.

Under an agreement reached with the Defense, Commerce and State Depts., no action will be taken on any Saudi-Arabia steel pipe export license applications before Jan. 1, 1949, without first consulting the Committee. The Committee is dead-set against export of pipe except where it is shown that production is increased by so doing.

An earlier action by the Office of International Trade had already barred granting of pipe export licenses for Saudi-Arabia until September when last quarter allocations are to be considered. Under this newest agreement, it is unlikely any shipments will be made before 1949.

Neither action, however, prohibits consideration of license appli-

cations for export of material other than pipe which may be required to continue construction on a reduced basis by making use of pipe on hand in the area.

Accumulated Royalties Ordered Paid by Court

Cleveland

• • • **The Federal District** Court here has been ordered to pay $9,749,000 held for the Cold Metal Process Co., Youngstown, to a trustee, the Union National Bank, Youngstown, appointed by the company.

The order was issued by Federal Circuit Judge Shackelford Miller, Louisville, who instructed the clerk of the Federal District Court here to pay the money to a designated trustee.

The action follows refusal of the U. S. Supreme Court to act on an appeal by the federal government. The case was tried in Louisville several years ago, with the government contending that patents held by Cold Metal Process Co. were invalid.

The Louisville court ruled the patents valid and a court of appeals there upheld the verdict. The money was paid to the court as royalties by persons using the patents. The Cold Metal Process Co. set up the Leon A. Beeghley Fund administered by a trustee who will now receive the money.

OIT Explains Steps Needed for Trading With German Firms

Washington

• • • **The Office of** International Trade, Dept. of Commerce has issued a 34-page pamphlet entitled "Trading with Postwar Germany," which explains what American exporters and importers need to know about economic conditions, foreign trade procedures, and military government regulations in order to trade with postwar Germany. This pamphlet sketches briefly the economic backgrounds of the American, British, French, and Soviet zones of occupation and describes the needs of each zone in terms of international trade.

More than 325 possible exports and about 150 possible imports of the American and British zones are

listed. The possible exports include iron and steel products, electrical equipment, scientific instruments, textiles, rubber products, glass, chemicals, pharmaceuticals, and many other commodities. Listed among possible imports are certain foodstuffs, forest and paper products, and minerals and nonferrous metals.

Lists of commodities suitable for export or import are not available from the Soviet zone and about 150 possible exports are listed for the French zone.

Regulations which apply to the transaction of business with other countries, travel, processing arrangements, and tariff treatment, are covered in the pamphlet. Foreign trade procedures in the Bizonal Area and the Soviet zone are presented in simple charts which trace all the details of an export or import transaction, and sample export contracts and import applications are included.

The pamphlet may be obtained for 5 cents from any field office of the Dept. of Commerce, or from the Superintendent of Documents, Washington 25, D. C.

Reports Exports of Iron and Steel For April Lowest in '48

Washington

• • • **Exports of iron** and steel dropped in April to 391,794 net tons —the lowest monthly tonnage recorded this year, according to the Commerce Dept.

The department also places the export tonnage of iron and steel products for the first 4 months of 1948 at 1,769,225 net tons. Hot-rolled strip accounted for 231,345 tons, while black steel sheets accounted for 158,999 tons of exports during the first 4 months.

Heavy April exports of tinplate and tagger's tin were recorded at 62,168 net tons, while nonfabricated plates accounted for 34,319 net tons during April.

Commodities exported during April and tonnages for each are as follows: Ingots, blooms, billets, slabs, sheet bars, 15,289; wire rods, 3418; skelp, 5290; iron bars, 433; concrete reinforcement bars, 11,776; steel bars, cold-finished, 2847; other steel bars (excluding alloy), 21,646;

alloy steel bars, 4512; welding rods, electric, 1788; boiler plate, 6017; other plates, not fab, 34,319; plates, fab., punched or shaped, 2208; iron sheets, black, 1898; steel sheets, black, 32,117; galvanized sheets, 4177; strip steel, cold-rolled, 4292; strip steel, hot-rolled, 6705; tinplate and tagger's tin, 62,168; terneplate (incl. long ternes), 1371; structural shapes, plain, 23,159; structural shapes, fab, 13,415; frames and sashes, 243; sheet piling, 5864;

Rails, 60 lb per yard and over, 18,521; rails, less than 60 lb per yard, 1975; rails, relaying, 2990; splice bars and tie plates, 2328; frogs and switches, 501; railroad spikes, 1236; railroad bolts, nuts, and washers, 1112; car wheels, tires and axles, 2197;

Seamless black pipe, 2083; seamless casing and oil line pipe, 24,558; seamless boiler tubes, 3189; welded black pipe, 4385; welded galvanized pipe, 4462; welded casing and oil line pipe, 17,887; welded boiler tubes, 80; other pipe and fittings, 5762; plain wire, 5541; galvanized wire, 4424; barbed wire, 4199; woven wire fencing, 1053; woven wire screen cloth, 634; wire rope and strand, 875; wire nails, 1834; other wire and manufactures, 3734; horseshoe nails, 46; tacks, 359. other nails, incl. staples, 1261; bolts, nuts, rivets and washers, except railroad, 6332; forgings 3205; horseshoes, 79.

Scrap Shortage in Europe Reported to Be 3½ Million Tons

London

• • • **The International** Panel on scrap supplies set up by the United Nations Economic Commission for Europe has held its first meeting. Overall import requirements of European countries for scrap indicate that the current deficit is about 3½ million tons. The panel recommends that efforts be made to get surplus war stocks, such as serviceable and unserviceable military equipment, made available for immediate scrapping. It emphasizes the need for accurate statistics on scrap stocks and movements, and has drawn up a program of reporting which it is hoped will furnish the necessary information for further action.

The panel accepted invitations

from France, Italy, the Netherlands, Switzerland and the United Kingdom to send teams to inspect scrap collection methods, stocks and processing plants in those countries. It is hoped that this exchange of information among the various countries will have a stimulating and constructive effect upon the European scrap situation.

Reports on the scrap situation in 13 European countries, plus the Saar and the bizone of Germany, show that with the exception of the bizone, more scrap is needed than is available. Consideration of the Western Germany scrap situation was postponed to a later session. Information was not available on the scrap situation in the USSR zone of Germany, however, increased exports from that zone would relieve the present scrap shortage.

Portal-to-Portal Act Reducing Liabilities After Court Decision

Washington

• • • **The Portal-to-Portal** Act will protect employers from any resulting back-wage liabilities as a result of the Supreme Court decision handed down in *Bay Ridge Operating Co.* v. *Aaron* and *Huron Stevedoring Co.* v. *Blue*, according to Wm. R. McComb, Administrator of the Wage and Hour and Public Contracts Div., Dept. of Labor.

Mr. McComb added that employers who have in the past paid time and one-half compensation for work because performed on Saturdays, Sundays, or holidays or at hours actually "outside the normal or regular working hours" and have treated the extra pay as an overtime premium in good faith reliance on the interpretations of the Wage and Hour Div. are in most cases protected.

However, under the Supreme Court decision, employers can no longer follow the Administrator's interpretations insofar as such extra payments are made because of the undesirable hours when the work is performed rather than because the hours are in excess of a specified standard. For the future, therefore, some employers will have to make necessary adjustments in their overtime pay practices in

order to come within the scope of the Supreme Court opinion. Enforcement on the revised basis will begin on July 1, 1948, in order to give affected employers a reasonable opportunity to make any necessary changes in their practices.

It was also pointed out by Mr. McComb that under the Supreme Court's decision extra pay by contract or statute for hours worked in any day or week in excess of a bona fide standard is not part of the base wages on which overtime must be computed under the Fair Labor Standards Act, and can be credited toward the extra compensation required by the Act for work beyond 40 hours in a workweek. This may be illustrated by collective bargaining agreements calling for bona fide overtime pay at time and one-half for work after 7 hours a day or 35 hours a week. The Supreme Court's opinion explicitly approved this interpretation which has been the Division's interpretation. In consequence, after the Circuit Court's opinion, that such overtime payments could not be offset against the requirements of the Act, have proven to be unfounded.

Except for the longshoring industry, there will not be any significant back-wage liabilities growing out of the decision in the longshore cases. In the longshoring industry the amount of liability will not be nearly as much as had been feared because of a number of factors. Among these are the fact that most longshoremen have not worked over 40 hours a week for a single employer in any significant number of workweeks; the fact that there is, in most instances, a good-faith defense under the Portal-to-Portal Act insofar as payments for Saturdays, Sundays, and holidays is concerned; and the fact that there is a two-year statute of limitations under the Act.

"The essence of the Supreme Court ruling," said Mr. McComb, "is that an employee who receives a higher wage rate because of undesirable hours or disagreeable work is entitled to be paid for work beyond 40 hours in a workweek at time and one-half figured on his actual pay, but that extra pay received for working long hours is not a part of the regular rate and can be credited against the overtime pay required by the Wage and Hour Law."

cluding plates, merchant and reinforcing bars, rods and miscellaneous items.

Procurement will be made by the Federal Bureau of Supply and will be spread among 29 different companies. Private agents will handle the steel for Iceland.

Lead Duties Suspended

Washington

• • • **A bill suspending** import duties on lead until June 30, 1949, has been signed into law by President Truman. The new law provides for the free importation of lead entered for consumption or withdrawn for consumption.

The products affected are: Lead-bearing ores, flue dust, mattes of all kinds, lead bullion or base bullion, lead in pigs and bars, lead dross, reclaimed lead, scrap lead, antimonial lead, and antimonial scrap lead.

Naval Ordnance Group Presents Impressive Display of Equipment

Selfridge Field, Mich.

• • • **Industrialists** and scientists attending the thirtieth national meeting of the American Ordnance Assn. here were treated to a display of the wide variety of crafts being made at the vast Naval Ordnance plant of Forest Park, Ill.

The Forest Park plant is the most modern and efficient torpedo factory in the world. Chief aim of the station is to rectify the mistakes of the last two wars and find out what makes a torpedo zig when it should zag.

Probably the newest of the Navy's ingenious devices shown at the exhibit was the rocket known as the Aerobee. Liquid fueled and designed primarily for upper atmosphere research, it reached an altitude of about 78 miles and attained a speed estimated at 4400 ft. per sec. The spectacular new Ram Jet which is a stovepipe-like engine has provided propulsion for supersonic speeds to almost 1500 mph.

Also shown was the Radio Proximity Fuse lodged in the nose of shells to detonate the shell at the most favorable position to inflict maximum damage on the target.

In addition to the Mark 13 torpedo used so effectively in the last war, the new Mark 16, perfected too

late to get into action, was also on display. The 16 is approximately 20 ft long and weighs 3900 lb including a war-head weighing 1365 lb.

Other wartime developments of the Navy in the field of projectiles in the ordnance exhibit were the 16, 14, 8 and 6 in. high capacity bombardment shells and a variety of simple-type rockets.

Progress made through the Navy Ordnance program was especially vivid in the display of mines. The old ash can type has been shelved and replaced by the new Mark 9 that has a tendency to rotate as it travels downward instead of flying helter skelter as its predecessor.

Stiff Fight from FTC If Congress Declares Pricing System Legal

Washington

• • • **"To keep the** word of promise to the ear and break it to the hope."

This lyric opinion comes from Walter B. Wooden, associate general counsel of the Federal Trade Commission, who says that's what Congress would be doing if it should legalize basing point pricing systems.

Although a number of congressmen already have stated privately that they would support legislation to nullify the Supreme Court's decision in the cement case, no such bills have yet been introduced.

Most congressmen prefer to wait and see what comes of the forthcoming investigation to be conducted by Senator Capehart, R., Ind., and his Senate Commerce subcommittee. But Mr. Capehart will not formally open his inquiry until autumn.

So Mr. Wooden's poetic expression can be interpreted simply as a warning that FTC will put up a stiff fight when—and if—legislation bestowing the blessing of legality to basing point systems comes before Congress.

Mr. Wooden, in a recent speech presented to the American Marketing Assn., declared that he sees "no way in which the force of the cement decisions can be overcome by legislation without returning to the program and philosophy of NRA."

"The combination to use the basing point system of identical delivered prices, against which the decision runs, is one which was and could be legalized only under such a program and philosophy," he stated.

"If Congress should favorably consider the proposal to legislate away the force of the cement decision, I hope it will not at the same time reaffirm its loyalty to the competitive system of free enterprise. To make such a reaffirmation would be to keep the word of promise to the ear and break it to the hope."

Such a move, he continued, would amount to saying that Congress thinks systems for creating identical delivered prices are "the embodiment of competitive principles, notwithstanding the highest judicial opinion to the contrary." He opinioned that it would be "much more forthright" to legalize such systems "in frank recognition of the fact that they negate and frustrate price competition."

"Conceivably even then Congress might decide to legalize such systems, but in my judgment that would be the largest single bite in a long nibbling process directed against the antitrust laws and the competitive economy they are designed to protect," he stated. "Or, to change the metaphor, there would be painlessly extracted from the antitrust laws what organized industry presently considers their most effective teeth."

Mr. Wooden pointed out that some businessmen feel that few changes will have to be made as a result of the cement decision, since the high court's opinion centered its attack against a combination and a planned course of action. This argument, he said, overlooks the fact that the Supreme Court now has reiterated its pronouncement of 3 years ago in the glucose cases that the law does not contemplate a meeting of competitor's delivered prices through systematic and reciprocal variations among sellers in their net factory prices even on a freight-absorption basis.

Actually, he opinioned, the true legal and economic effects of the cement decision will be found somewhere between these two extremes. But, he added, if business does not see substantial changes in the com-

petitive situation as a result of the decision, "then the whole business of antitrust law enforcement is a delusion, producing only technical triumphs and visionary victories worth no more than the paper on which the law records them."

Those who say that industry cannot operate under the laws of the cement decision say in effect that industry cannot operate competitively and that it is not operating competitively, he declared. And, he continued, if the proposal to nullify the effect of the decision "should happen to enlist broad support from the business world, it would demonstrate that we are farther on the road to a totalitarian economy than we have feared."

Whether or not FTC has assigned itself the task of ruling out monopoly no matter what the cost may be to the economy still remains to be seen. Senator Capehart's subcommittee will undoubtedly look into this question and a score of others in the coming months.

Form Welding Institute At Meeting in Brussels

London

• • • **Welding has just** achieved organization on an international scale by the formation of the International Institute of Welding, at a meeting in Brussels attended by the representatives of 14 countries. Mr. G. Parsloe, secretary of the British Institute, was elected the first secretary general of the international body.

The primary business of the meeting was to establish the institute and to set up a number of special commissions on various technical subjects. In addition, two sessions were devoted to technical papers, each of which review the existing knowledge in a given field of study and formulated suggestions for further research.

It is intended that an annual meeting of this character shall be organized in the future. The governing council has accepted an invitation from the Netherlands to meet there in 1949; and has also accepted an invitation from the British delegation to hold the first World Welding Congress in Great Britain in the British festival year, 1951.

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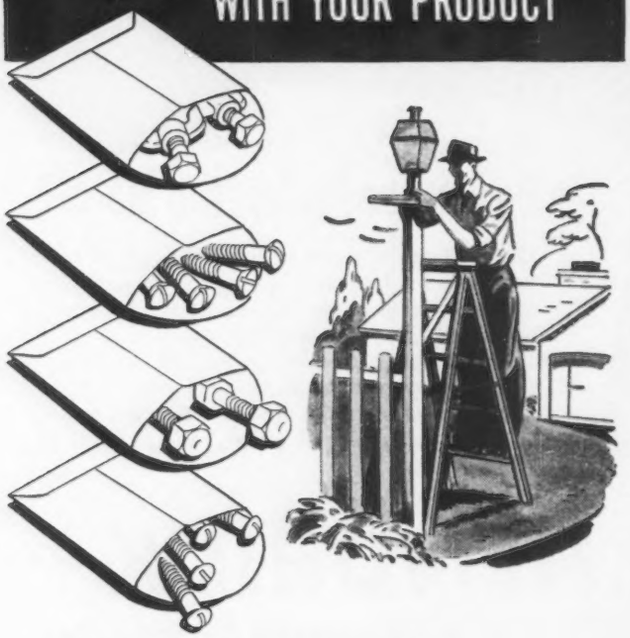

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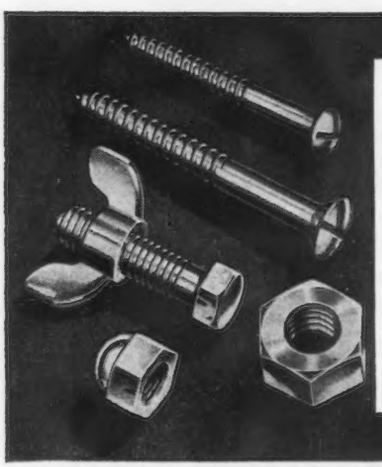

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